App. F. IX-4

H.B. 563
14/2

Previous References

1937-8
(C.V)

File No. 24-37

Serial Nos. 1-3

Letter References.

~~A.H~~ A·H 69-38 (1-3)

PRESERVED

GENERAL AND REVENUE SECRETARIAT.

Serial Nos.

P-102 ~~three~~ two.
E

Part B for March 38

SUBJECT.

Administration Report of the Mysore Serum Institute for 1936-37

D 3706-7 & F. 2-38

~~No~~ Dir of Agriculture
Comptroller &c.
-Govt

WD 0418—GPB—22,500—29-8-36

Reviews The

Administration report of the Sivan Sandalwood

1

1936

General and Revenue Secretariat | C-V File No. 24 of 1937 | [App. F. III—2

Serial No.

1 From the Dir of Agriculture
No Roc 287-4c dos 37-38 d 1/11/37
Forwards the administration report of the Mysore Sandal Circles for the year 1936-37 with his remarks thereon and with a draft for the Govt. Central Printing, for approval.
Fees.
5/11
Dsec
6.11.37

OFFICE OF THE SECOND MEMBER OF COUNCIL, 20 JAN. 1938 No. 5259

2 D 3467 d 10-11-37 Supt. Govt. Press To Secretary
forwards a copy for print with instructions.
D 3468 Copy to Dir. of Agr.

A draft-report is put up for approval
Fees
23/11
ICS 28/12
Dec 1937
Secretary

3308/22/12

HW 19.1.38
ICS 19-1-38

SECOND MEMBER OF COUNCIL, 25 JAN. 1938 No. 5369

This draft (typed) may be put up
Fees
25/1/38
HW 26.1.38
ICS 24-1-38.

A Dair draft sent
Fees
23/1
(Record Section)
ICS 25-1-38.

NOTE—Contn. Sheet.

WD 0284—GPB—30,000—13-8-37

MJ 28-1-38

HW 26.1.38 26/1/38
ICS 26/1

Administration report of the Revenue Department for 1936-37 2 copies

CU File No. 24 of 193).

General and Revenue Secretariat

Subs. for perusal

Dewan)

27-1-38.

D 4999

NW. 29.1.38

Issued 29/1

D 5786 - 37 dt 8-2-37 To Dy. of Pgs. Compl 3

Reviews the administration report for the year 1936-37

Administration report of the Sikkim Durbar (3)

C.V.

General and Revenue Secretariat

File No. 24 of 1937

[App. F. III—2

Serial No.

Two drafts - F.N. & S.N. - are for favour of early

9/2

10/2

Dealing Assistant

Superintendent

Dewan

12.2

7.2. Signed by Member

15/2

COUNCIL
SECOND MEETING
14 FEB. 1938
No. 96

4164 11/2

5569

NOTE—Contn. Sheet.

WD 0284—G.P.B.—30,000—13-4-37

Final Note by the Second Member of Council.

Subject.—

Administration report of the Mysore Serum Institute for the year 1936-37.

I beg to submit herewith, for His Highness' gracious perusal the administration report of the Mysore Serum Institute for the year 1936-37 with the Government review thereon.

M. Ramadas

MEMBER OF COUNCIL.

Bangalore,
15th February 1938.

Submitted to His Highness.

I submit herewith a Final Note by the Second *Member of Council on the subject of* the administration report of the Mysore Serum Institute for the year 1936-37 with the Government review thereon *for His Highness' gracious* perusal.

Mirza M. Ismail

Bangalore,
16th February 1938.

Dewan.

6

Record of Cases submitted for the Orders of His Highness the Maharaja.

Subject.

Administration report of the Mysore Serum Institute for the year 1936-37 and the Government review thereon.

Chief Secy
MS
18-2-38

Order.

~~KRW~~
17/2/38

488

MS
21.2.38

General and Revenue Secretariat.

24 ✓ HH 479 7 CN

SUBJECT :—

Administration Report of the Haffkine Serum Institute for the year 1936-37 and the Government review thereon.

(*)

31. All urgent or confidential files returned with His Highness' orders may in the absence of instructions or indications to the contrary, be ordinarily circulated to the Members of Council for perusal after the issue of orders.

33. The Secretaries concerned should see that orders in the cases referred to above are issued at once and that the files are returned immediately after to the Chief Secretary for circulation to the Members.

34. In all other cases, the files will first be circulated to the Members of Council at Headquarters and then sent to the Secretariat concerned for the issue of orders.

Circulated to Members of Council for perusal of His Highness' orders ~~before/after~~ issue of orders. (*Vide* Rules 31, 33 and 34 of the Subsidiary Rules for the conduct of business of Council in the Manual of Council Rules and Procedure.)

*

Chief Secretary to Government.

Through the Secretary to Government,

~~Development~~ Department.

FIRST MEMBER OF COUNCIL.

SPZ 24/2

6155
22.2.38

SECOND MEMBER OF COUNCIL.

Secretary to Govt., Dev. Deptt., with compliments

26/2

26.2.

1/3

NOTE.—Contn. sheet.

WD 1170—GPB—1,000—24-12-36

CN 24-37-1

A.B.C. 5th Edition

Telegraphic Address "Agri., Bangalore."

DEPARTMENT OF AGRICULTURE,

MYSORE STATE.

2402

No. Roc 287-He 105/37-38. OFFICE OF THE DIRECTOR OF AGRICULTURE,

Bangalore, 1st November *193* 7.

- NOV. 1937

FROM

T. G. RAMA IYER, Esq., B.A.,
DIRECTOR OF AGRICULTURE IN MYSORE,
BANGALORE.

TO

M. Venkatanaranappa, Esq., B.A.,
Secretary to the Government of H. H. the
Maharaja of Mysore, Dev. Deptt., Bangalore.

SIR,

I have the honour to submit herewith in triplicate, the report on the working of the Mysore Serum Institute for the year 1936-37.

The Serum Institute continued to prepare large quantities of Sera and Vaccines for controlling the contagious diseases of live-stock and poultry. The products of the Institute continued to be popular in several others parts of India. 3,59,000 doses were issued to places outside the State as against 3,56,000 doses issued to the Mysore Veterinary Department. It is gratifying to note that the Governments of Hyderabad, Baroda, Coorg, Cochin, Pudukota, Indore, Bhopal, Bhavanagar, Jodhpur, Travancore and Kolhapur sent their indents for supplies of Sera and vaccines to this Institute. Owing to greater incidence of Rinderpest, large quantities of Rinderpest serum were issued to the Mysore Civil Veterinary Department.

Dr. P. M. Narayanaswami Naidu, Veterinary Research officer was engaged in the investigation of Prophylactic methods against poultry disease in the State. Vaccines against Rabies in dogs, Anthrax in sheep and cattle, Strangles in horses and chicken pox in poultry were also prepared by Dr. Naidu on an experimental scale and are proposed to be issued shortly. Mr. Ranganatha Rao, Assistant Superintendent, Civil Veterinary Department continued his investigation of Johne's disease among cattle, subsidised by the

Imperial Council of Agricultural Research.

The Institute has worked very efficiently during the year. The quantities of sera and vaccines sold during the year are as detailed below.-

Anti-rinderpest serum ...	2,37,600	doses.
Rinderpest Goat virus serum ..	42,795	"
Anti-haemorrhagic Septicaemia serum ...	1,05,120	"
Anti-black quarter serum ..	28,720	"
Anti-Anthrax (Bovine serum) ...	31,040	"
Anti-haemorrhagic Septicaemia vaccine ..	89,800	"
Black quarter Bacterin ..	1,38,100	"
Black quarter filtrate ..	16,000	"
Sheep-pox vaccine ..	87,500	"

The total revenue realised from the working of the Institute during the year was Rs.1,00,600/- against an expenditure of Rs.67,600/- as against a revenue of Rs.74,900/- and an expenditure of Rs.75,000/- in the previous year.

I have the honour to be,
Sir,
Your most obedient servant,

kvs.

Director of Agriculture.

A SUMMARY OF THE ANNUAL REPORT OF THE MYSORE SERUM INSTITUTE FOR THE YEAR 1936-37.

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Introduction:- The main work of the Mysore Serum Institute during the year 1936-37 consisted of, as in previous years, the preparation of large quantities of several sera & Vaccines for controlling important contagious diseases of Live stock & Poultry in our State. The production of these biological products was so regulated as to always maintain sufficient stock on hand, and the indents received both from within and from out side the State, were complied with fully and promptly.

Although the Institute was primarily started to ensure adequate preparation and supply of biologicals for the control of epizootics in the State it is gratifying to report that the products of this Institute have become increasingly popular also in several other parts of India as is evidenced by the fact that the demand for these biologicals from outside the State is even more than that from the Mysore Civil Veterinary Department. The total number of unit doses issued to places outside the State alone during this year, was about 3,59,000 doses whereas to the Mysore Civil Veterinary Department it was nearly 3,56,000 unit doses as against 3,16,000 and 2,52,000 unit doses respectively in the preceding year. Especially after the tour of the Superintendent in India and Ceylon on deputation in the year 1936 indents are being received for the first time from a number of new places also as detailed in the

margin,* in addition to the usual indents from the the Governments of Hyderabad, Baroda, Coorg, Cochin, Pudukkottai, etc, who have been our regular long standing customers.

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* Indore, Bhopal, Bhavanagar, Jodhpur, Trivandrum, Kolhapur, Sangli, Ujjain Belgaum, Savanur, Pondicherry, Morvie (Kathiawar), etc.,

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As regards the introduction of Goat Virus alone inoculations in preference to the Sero Virus Simultaneous method as sanctioned by Government in their Order No. D. 4835-6 C.V. 59-33-2 dated 9-4-1934 for combating Rinderpest in our State, as the former method is decidedly far cheaper and less cumbersome than the latter, it may be stated with confidence that the efficacy of goat blood virus alone as a single vaccine, has been well established both by the experiments conducted by this Institute here as well as on Amrit Mahal herd, and also by the extensive field inoculations that are being conducted by the Mysore Civil Veterinary Department for over three years past. As a matter of fact goat blood virus alone is used with great advantage in almost all cases of outbreaks of rinderpest in our State, practically dispensing with the use of costlier serum.

Administration:- I held charge of the Institute throughout the year under report excepting for a short period from 1st July 1936 to end of the month when I had been deputed by Government to visit some of the important States and Biological Institutes in North India.

Mr. P.U. Nayar continued to be the Bacteriological Assistant throughout the year and also acted as Superintendent of the Institute

during my absence on deputation.

Dr. P.M. Narayanaswami Naidu, was in charge of the Research Section of the Institute during whole of this year and his designation was changed from "Assistant Superintendent" to that of "Veterinary Research Officer" vide G.O.No.D. 5433-34/C.V. 40-36-2 dated 10/13-2-37.

Buildings:- The present cattle sheds, being only thatched ones, have been found to be very unsatisfactory in as much as that their roofings are frequently damaged due to heavy winds and rains, causing thereby much inconvenience and also necessitating considerable recurring expenditure towards repairs. Hence it has been found very necessary and also desirable to construct the sheds on a permanent basis.

As regards Residential Quarters to the Superintendent and the staff of this Institute, Government have been pleased to sanction the construction of a building for the Superintendent in the first instance and the work will be taken on hand early next year. It is believed that the question of residential quarters to the other staff will also be considered favourably in due course.

Supplies:- The total supplies of the various biologicals to the Mysore Civil Veterinary Department during the year under report showed an increase over those in the previous year excepting in cases of Haemorrhagic Septicaemia Serum, Haemorrhagic Septicaemia Vaccine, Blackquarter Serum, and Fowl Cholera Vaccine for which the demands were comparatively

comparatively less.

But the demand for Rinderpest Serum and Rinderpest Virus from the Mysore Civil Veterinary Department was far more (viz., over 4 times more) than that in the previous year, evidently due to a greater incidence of rinderpest in our State during the year under report as compared with that in the preceding year when there were practically no outbreaks of this disease at all. In the case of Haemorrhagic Septicaemia Serum and Haemorrhagic Septicaemia Vaccine the supplies were only about half of what they were in the previous year, as there was an appreciable decline in the incidence of Haemorrhagic Septicaemia. Whereas the demand for Blackquarter Bacterin was considerable more (viz., by about 60%) while the same for Blackquarter Serum was less than that in the previous year (viz., by about 46%) as a result of timely preventive inoculations with Bacterin alone in preference to Serum inoculations at the scenes of actual outbreaks. Besides, the quantity of sheep-pox Vaccine supplied during the year was also almost double that in the previous year.

Again it may be observed that the demands from places outside the State for all the products were very much more than those in the previous year excepting for Anti Rinderpest Serum and Rinderpest Bull virus (viz., by about 8 times more in respect of Anti Anthrax Serum and Blackquarter Bacterin, five times more in the case of Goat virus, and twice as much in the case of Haemorrhagic Septicaemia Serum, Blackquarter Serum and Blackquarter Filtrate.

Since the commencement of this Institute in 1927-28 a total of about 12½ million unit doses of various biologicals have been issued from this Institute, uptodate, the quantity supplied to places outside the State alone being over 2 million unit doses., bringing in a revenue of nearly Rs. 2,84,000 to our State within the last 6 years.

Finances:- A note-worthy feature in the working of the Institute during the year under report was that there was a considerable increase in revenue over that of last year, in as much as that there was a revenue of Rs. 1,00,600/- this year, as against only Rs. 74,900/- in the previous year, while there was also a reduction in expenditure from Rs. 75,000/- to Rs.67,000/-, thus realising during the year a profit of Rs. 33,000/- which would work out to about 50%. This increae in revenue was due to the general increase in supplies made to both within and outside the State.

Research Section:- An important feature during the year is that with a view to encourage poultry industry Government have been pleased to sanction provisionally for one year, a scheme of Research prepared by Dr. P.M. Narayanaswami Naidu, Veterinary Research Officer on prophylactic methods against diseases affecting poultry in our State, and much valuable data is already being collected by him in this connection. The Government have also forwarded to the Imperial Council of Agricultural Research, a more detailed scheme on the subject, extending over a period of five years for

for consideration of their Advisory Board at their ensuing meeting at Delhi during October 1937.

Another noteworthy feature is that certain interesting and important investigations have been carried on in the Research Section of this Institute on some of the obscure diseases of live-stock and poultry and four new products, viz., vaccines against rabies in dogs, and other animals 2) Anthrax in sheep and cattle 3) strangles in horses, and 4) chicken-pox in poultry, were also prepared on an experimental scale. These new vaccines have stood all laboratory tests successfully and they are proposed to be issued shortly for wider trial in the field.

Experiments:- Certain experiments were conducted and some progress was made during the year under report, as noted below in improving the technique of the preparation of some of the products already under issue, so as to increase their efficacy.

Rinderpest Virus (bovine):- The strain of virus maintained in the Institute had to be passaged through sheep once during the year, for purposes of exaltation when it began to decline in its virulence.

Rinderpest virus (goat adapted):- The mixed strain of Muktesar and of this Institute was successfully maintained in goats without any variation in its behaviour, virulence or antigenic value.

Blackquarter:- As Blackquarter is generally considered to be caused by mixed strains of the clostridium group of organisms, some of the typical strains were isolated to be incorporated in the preparation of

of biologicals against blackquarter and highly virulent cultures only were exclusively used for preparing Bacterin with very satisfactory results.

Fowl Cholera:- Comparative tests for potency of vaccines prepared from heat killed and carbolised cultures (Marcos and Hosny Mohammed's method) were made and as the latter was found to be superior, this method was adopted for the routine preparation of fowl cholera vaccine.

Haemorrhagic Septicaemia:- As the casual organisms of fowl cholera and Haemorrhagic Septicaemia are members of the same group - pasteurellae, similar experiments as in the case of fowl cholera vaccine were conducted with regard to Haemorrhagic Septicaemia vaccine also and they again proved the superiority of the carbolised vaccine over the heat killed one. The chemically killed vaccine is therefore now in vogue.

Sheep-pox vaccine:- A strain of sheep pox received from Sidlaghatta was found to be highly virulent and as such it was used in the preparation of sheep pox vaccine during the year.

GENERAL.

Twenty-two Veterinary Graduates from different places have undergone short course training in this Institute during the last four years, including the following seven candidates selected for training during the year under report (three from Cochin, one from Bhavanagar, one from Dharwar, and two from Mysore State.).

The Institute is becoming increasingly popular as a place of scientific as well as of general interest, attracting every year a number of distinguished visitors, both official and non official from within and also from outside the State.

During the year under report the Institute had the honour of being graciously visited by His Highness The Maharaja of Mysore, along with the Dewan, and also by His Highness the Maharaja of Gwalior who were pleased to go round all the different sections of the Institute evincing a keen interest in their working. There were also several other distinguished visitors to the Institute during the year.

Superintendent,
Serum Institute.

ANNUAL REPORT OF THE MYSORE SERUM INSTITUTE, HEBBAL BANGALORE, FOR THE YEAR 1936-37.

--oOo--

Introduction:- The main work of the Mysore Serum Institute during the year 1936-37, consisted of as in previous years, the preparation of large quantities of several Sera & Vaccines for controlling important contagious diseases of Live Stock and poultry. The production of these biological products was so regulated as to always maintain sufficient stocks on hand; and all the indents received both from within and from outside the State, were complied with fully and promptly.

Although the Institute was primarily started to ensure adequate preparation and supply of Biologicals for the control of epizootics in the State, it is gratifying to report that the products of this Institute have become increasingly popular also in several other parts of India. The total number of unit doses issued to places outside the State alone during this year was about 3,59,000 whereas to the Mysore Civil Veterinary Department it was nearly 3,56,000 unit doses as against 3,16,000 and 2,52,000 unit doses respectively in the preceding year. The All India Tour undertaken by me in 1936 on deputation had an educative value, and gave greater publicity for the work of the Institute. Many of the Indian States evinced greater interest in the Live-stock problems and disease control, and placed orders

for supplies with this Institute. Indents are being received for the first time from a number of new places also as detailed in the *margin in addition to the usual indents from the Governments of Hyderabad, Baroda, Coorg, Cochin, Pudukkottai etc., who have been our regular, long-standing customers.

*Indore, Bhopal, Bhavanagar, Jodhpur, Trivandrum, Kolhapur, Sangli, Ujjain, Belgaum, Savanur, Pondicherry, Kathiawar, etc.

The total supplies of the various Biologicals to the Mysore Civil Veterinary Department during the year under report showed an increase over those in the previous year as already stated above, excepting in case of Anti Haemorrhagic Septicaemia Serum, Harmorrhagic Septicaemia Vaccine, Anti Blackquarter Serum, and Fowl Cholera Vaccine, for which the demands were comparatively less.

But the demand for Rinderpest Serum and Rinderpest Virus from the Mysore Civil Veterinary Department was far more (viz, over four times more) than that in the previous year evidently due to a greater incidence of rinderpest in our State during the year under report as compared with that in the preceding year when there were practically no outbreaks of this disease at all. In the case of Haemorrhagic Septicaemia Serum and Haemorrhagic Septicaemia Vaccine the supplies were only about half of what they were in the previous year, as there was an appreciable decline in the incidence of Haemorrhagic Septicaemia. Whereas the demand for Blackquarter Bacterin was considerably more (viz, by about 60%) while the

the same for Blackquarter serum was less than that in the previous year (viz., by about 46%) as a result of timely preventive inoculations with bacterin alone in preference to serum inoculations at the scenes of actual outbreaks. Besides, the quantity of Sheep pox vaccine supplied during the year was also almost double that in the preceding year.

Again it may be observed that the demands from places outside the State for all the products were very much more than those in the previous year excepting for Anti-Rinderpest Serum and Rinderpest bull virus, viz., by about 8 times more in respect of Anti-Anthrax Serum and Blackquarter Bacterin, 5 times more in the case of Rinderpest goat virus, and twice as much in the case of Haemorrhagic Septicaemia Serum, Blackquarter Serum, and Blackquarter filtrate.

Since the commencement of this Institute in 1927-28 a total of about 12½ million unit doses of various biologicals have been issued from this Institute, uptodate, the quantities supplied to places outside the State alone being over 2 million unit doses, bringing in a revenue of nearly Rs.2,84,000/- to our State within the last 6 years.

A note-worthy feature in the working of the Institute during the year under report is that the Institute has been able to realise a total revenue of Rs.1,00,600/- against an Expenditure of only Rs.67,600/- realising thereby a profit of about Rs.33,000/-. In the preceding

preceding year the total revenue amounted to only Rs.74,900/-.

Since Government in their order No. D.4835-6/C.V.59-33-2 dated 9-4-1934 sanctioned the substitution of goat virus alone method in preference to the cumbersome and costly serum-simultaneous method against rinderpest, the results of protection undertaken by the Department in the several outbreaks have been very encouraging. Experiments undertaken by the Institute to study the comparative value of these methods both at the Institute and on a herd of Amritmahal cattle for the past three years, have fully borne out the superiority and efficacy of goat virus alone methods as a practical and more economical measure for rinderpest.

An important feature during the year is that with a view to encourage Poultry industry Government have been pleased to sanction provisionally for one year, (vide Government order No. D. 8583 - 85/C.V. 88-36-2 dated 8/10-6-37) a scheme of research prepared by Dr. P.M.Narayanaswamy Naidu, Veterinary Research Officer, on prophylactic methods against diseases affecting poultry in our State, and much valuable data is already being collected by him in this connection. The Government have also forwarded to the Imperial Council of Agricultural Research, a more detailed scheme on the subject, extending over a period of 5 years for consideration of their Advisory board at their ensuing meeting at Delhi during October 1937.

Another noteworthy feature is that

that certain interesting and important investigations have been carried on in the Research Section of the Institute on some of the obscure diseases of Live stock and poultry and four new products, viz., vaccines against rabies in dogs and other animals (2) Anthrax in sheep and cattle, (3) strangles in horses and (4) chicken-pox in poultry, were also prepared on an experimental scale as detailed in the annexed report. These new vaccines have stood all laboratory tests successfully and they are proposed to be issued shortly for vider trial in the field.

The research section of the Institute having been provided with special laboratory facilities separate accommodation etc., for conducting scientific investigations and advanced research work, Dr. P.M.Narayanaswamy Naidu, Veterinary Research Officer, has also been carrying on a serological study on Sandal Spike disease on behalf of the Mysore Forest Department.

Besides, the Assistant Superintendent in charge of the Scientific Section of the Civil Veterinary Department has also been provided as in previous years with all laboratory facilities in this Institute for investigating of Johne's disease among cattle in our State - subsidised by the Imperial Agricultural Research Council, and also for carrying on the routine laboratory work of the Civil Veterinary Department. Urine harmone for the treatment of sterility among cows and slow covering bulls, prepared in this section and supplied to Village Panchayats and Travancore State has been favourably reported upon.

Certain experiments were conducted and some progress was made during the year under report, as noted below in improving the technique of the preparation of some of the products already under issue so as to increase their efficacy.

Rinderpest Virus(Bovine):- The strain of virus maintained in the Institute had to be passaged through sheep once during the year, for purposes of exaltation when it began to decline in its virulence.

Rinderpest Virus (Goat Adapted):-

The mixed strain of Muktesar and of this Institute was successfully maintained in goats without any variation in its behaviour, virulence or antigenic value.

Blackquarter:- As Blackquarter is generally considered to be caused by mixed strains of the clostridium group of organisms, some of the typical strains were isolated to be incorporated in the preparation of biologicals against Blackquarter, and highly virulent cultures only were exclusively used for preparing Bacterin with very satisfactory results.

Fowl Cholera:- Comparative tests for potency of vaccines prepared from heat killed and corbolised cultures (Marco's and Hosny Mohammed's method) were made and as the latter was found to be superior, this method was adopted for the routine preparation of Fowl Cholera Vaccine.

Haemorrhagic Septicaemia:- As the causal organisms of Fowl Cholera and Haemorrhagic Septicaemia are members of the same group - Pasteurellae, similar experiments as in the case of Fowl Cholera Vaccine were conducted with regard to Haemorrhagic Septicaemia Vaccine also and they again proved the superiority of the carbolised vaccine over the heat killed one. The chemically killed Vaccine is therefore now in vogue.

Sheep-pox Vaccine:- A strain of Sheep-pox received from Siddlaghatta was found to be highly virulent and as such it was used in the preparation of sheep-pox Vaccine during the year.

During the year under report samples of all the different sera & Vaccines prepared in the Institute and also certain parasites found in domestic animals, together with some interesting and instructive photographs, charts, slides, etc, were exhibited not only in the Dasara Exhibition at Mysore, as in previous years, but also in the All India Industrial Exhibition, held at Lucknow from December 1936 to February 1937. Besides, the Biological products of this Institute were arranged to be exhibited in the Ghati Subramanya Jatra in January 1937 and also in the Nagour Cattle Fair (Jodhpur State) during February and March 1937.

I attended on deputation the meeting of the Animal Husbandry Wing of the Imperial Council of Agricultural Research, held at Madras in December 1936, and also the Animal Health Sub Committee thereof. I also delivered two lectures

lectures on " Diseases of animals" and "Cooperative Dairying and Insurance" to the Cooperative Training Classes held in February 1937. In June 1937 a lecture was delivered by me on "Some Aspects of disease Control in animals" at the Indian Institute of Science under the auspices of the "Society of Biological chemists", India.

II ADMINISTRATION.

I held charge of the Institute throughout the year under report excepting for a short period from 1st July 1936 to end of the month when I had been kindly deputed by Government to visit some of the important States and biological Institutes in North India.

Mr. P.U.Nayar continued to be the Bacteriological Assistant throughout the year and also acted as Superintendent of the Institute during my absence on deputation.

Dr. P.M.Narayanaswamy Naidu was in charge of the Research Section of the Institute during whole of this year and his designation was changed from "Assistant Superintendent" to that of " Veterinary Research Officer" (vide G.O.No.D.5433-34/C.V.40-36-2 dated 10/13-2-1937.).

III Staff.

The non gazetted staff of this Institute consisted of the following:-

1. Veterinary Section:

Five Veterinary Inspectors and

and ten salustries.

2) Research Section: One Veterinary Inspector and one Salustry.

3) Office section: One Head Clerk, one Head Accountant, five clerks, five peons and two watchmen.

4) Laboratory section. One Mechanic and four Laboratory attendants.

5) Packing section : One carpenter and one packer

6) Labour section: One Maistry, 63 cattleman and 6 thoties.

IV BUILDINGS.

The present cattle sheds, being only thatched ones, have been found to be very unsatisfactory in as much as that the roofings are frequently damaged due to heavy winds and rains, causing thereby much inconvenience and also necessitating considerable recurring expenditure towards repairs. Hence it has been found very necessary and also desirable to construct the sheds on a permanent basis. Although this is an important pressing item of work, it has not been possible to be carried out so far, for want of sufficient funds for the purpose. However, it is hoped that it will be taken on hand early.

As regards residential quarters to the Superintendent and the staff of this Institute, Government have been pleased to sanction the construction of a building for the Superintendent in the first instance and the work will be taken on hand early next year. It

It is believed that the question of residential quarters to the other staff will also be considered favourably in due course.

V Cultivation.

The raising of fodder crops on the Institute grounds which had been undertaken by utilising the services of the cattlemen of the Institute alone, during their spare time, was found to be quite successful in as much as that it not only reduced the expenditure under "Feeding charges" but also afforded fresh green fodder for the animals of the Institute; and as such some more bits of the land belonging to the Institute were also brought under cultivation during this year and 115 tons of green jola, 16,076 lbs. of lucerne; 1,150 lbs. of ragi straw, and 532 seers of ragi of the aggregate value of about Rs.1,600/- were grown and the same used for feeding the animals.

VI. Animals.

As usual he-buffaloes, buffalo bull calves, goats, etc. required for the production of sera and vaccines as well as for tests and experiments were purchased from contractors on "Tender system", and the 'done' animals were sold to tender contractors alone as and when available. However, the small animals like guinea pigs and rabbits, required for experiments and tests, were obtained as in previous years by breeding the same in the Institute, and supplemented by occasional purchases.

The details of animals used during the year under report for production of biological products and for different tests and experiments are as follows:-

1. 117 fresh he-buffaloes for preparing Anti-Rinderpest Serum.

2. 2 discontinued rinderpest serum makers for preparing Anti-Fowl Cholera Serum.

3. 77 discontinued rinderpest serum makers for the production of Anti-Haemorrhagic septicaemia Serum.

4. 31 discontinued Rinderpest Serum makers for preparing Anti-Anthrax Serum, 16 of which were discontinued Haemorrhagic Septicaemia Serum producers as well.

5. 181 fresh buffalo bull calves for preparing rinderpest virus as well as for conducting tests.

6. 4 bull calves for rinderpest virus experiments.

7. 485 goats for preparing 'goat virus' and for conducting experiments.

8. 95 sheep for preparing 'Sheep pox vaccine' and for experiments.

9. 183 birds and 143 laboratory animals for different tests and experiments.

PRODUCTION AND SUPPLY OF SERA AND VACCINES.

Anti-Rinderpest Serum:- Although the original object with which the Institute was started, was to prepare rinderpest bull virus and rinderpest serum required for use of the Civil Veterinary Department of this State only, for conducting Serum simultaneous inoculations, yet as a result of the general decline in the

incidence of the disease consequent on the extensive campaign of protective inoculations undertaken by the Mysore Civil Veterinary Department, year after year, and also due to the introduction of 'goat virus alone' inoculations all over the State for controlling even the few stray outbreaks of the disease, there has been a noticeable fall in the demands for rinderpest bull virus as well as rinderpest serum from the Mysore Civil Veterinary Department. In fact the supplies made in the recent years for use in our State are almost negligible as compared with those a few years past, in as much as that only 6,500 doses of rinderpest serum and 75 doses of bull virus were supplied in the year 1935-36 as against 2,45,000 doses and 2,52,000 doses supplied respectively in 1932-33, before the introduction of goat adapted virus. However, the demand for rinderpest serum from outside the State continues to be nearly as great as before, the total supplies during a year being about 2,00,000 doses on an average. Thus it is seen that rinderpest serum is required to be prepared in this Institute mainly to meet the outside demands.

As there was a stock of only 54,350 doses of serum available, in the commencement of the year under report, 117 fresh he-buffaloes were used and 1,83,250 doses (5 c.c. being the unit dose) were prepared during the year as against 1,69,700 doses in the previous year. Thus, out of the total quantity of 2,37,600 doses available for issue this year, 1,43,200 doses were supplied to places outside the State

State and 30,200 doses to the Mysore Civil Veterinary Department as against 1,90,000 doses and 6,500 doses respectively in the previous year. 1,25,000 doses were issued to Hyderabad, 2,100 doses to Baroda, 1,500 doses to Coorg and 250 doses to Ramdurg as against 1,65,000/- doses 12,000 doses, 5,000 doses and 3,200 doses respectively in the preceding year.

During the year, indents were received for the first time for 5,000 doses from Kolhapur, for 6,000 doses from Indore, for 1,000 doses each from Bhopal, Bhavanagar, and Jodhpur, for 250 doses from Savanur and for 100 doses from Ujjain.

Rinderpest Bull Virus:- Virus being a very fragile product which keeps potent only for about a week, it is not always practicable to get supplies from this Institute for use in distant places outside the state and as such there has not been much outside demand for this Virus. Hence this product is required to be prepared in this Institute mainly for use of the Mysore Civil Veterinary Department. In recent years on account of the general decline in the incidence of Rinderpest in Our State and also due to the introduction of Goat Virus alone inoculations in preference to Sero Virus Simultaneous method, as already stated above, there has been very little demand for Bull Virus even from within the State. But all the same, even though there is not much demand for this virus for field use, yet some calves are required to

to be inoculated periodically for maintaining the strain of Virus and for purposes of tests, immunisation of Rinderpest Serum Producers etc, and incidentally some quantities of virus is also drawn from each calf. Thus only 72 buffalo bull calves were used and 8,825 doses of virus (1 cc being the unit dose) were drawn this year as against 148 calves used and 10,575 doses produced in the preceding year. Out of the 72 calves used 10 calves were rejected as non reactors (i.e., as not showing typical symptoms of the disease in time). While in the previous year 49 calves had been rejected as non reactors.

From the Mysore Civil Veterinary Department there was a demand for 725 doses of this Virus during the year whereas in the previous year the demand was only for 75 doses. From Bhavangar, an indent for 25 doses of virus was received for the first time during the year under report. 950 doses were used in the Institute for experimental purposes as against only 75 doses used in the preceding year.

Rinderpest Goat adapted (blood) Virus :-

As the efficacy of goat adapted virus as a single vaccine, for effective control of rinderpest has been well established, this product is becoming increasingly popular, and it is in very great demand both from within and from outside the State. As a result, the production of this virus had also to be considerably increased this

this year (viz, by more than four times that of last year), to cope with the increased demands. Consequently 482 goats were employed and 63,013 doses of virus (1 cc being the unit dose) were drawn whereas in the previous year only 330 goats were used and 14,835 doses were produced.

During the year under report 36,390 doses of goat virus were supplied to the Mysore Civil Veterinary Department and 6,405 doses to places outside the State as against 1,470 doses and 1,185 doses supplied respectively in the preceding year. Indents were also received for the first time for 2,040 doses from Kolhapur for 1,230 doses from Savanur, for 945 doses from Sangli, for 840 doses from Indore, for 510 doses from Bhavanagar and for 210 doses from Morvi State (Kathiawar).

Anti Haemorrhagic Septicaemia Serum:-

As there were only 50,600 doses of Haemorrhagic Septicaemia Serum on hand at the commencement of the year, 77 discontinued rinderpest serum makers were used and 54,840 doses (15 cc being the unit doses) were prepared this year as against 25 Serum makers used and 23,900 doses of serum prepared in the previous year, and thus a total quantity of 1,05,440 doses of serum were available for issue this year. The demand for serum during the year from places outside the State was almost double that in the previous year, in as much as that 94,400 doses were supplied this year as against only 57,100 doses supplied last

year. As regards the demand from the Mysore Civil Veterinary Department it was only about half of what it was in the preceding year and as such only 10,620 doses were supplied this year as against 18,720 doses in the previous year. This fall in indents from the Mysore Civil Veterinary Department was due to the appreciable decline in the number of outbreaks of Haemorrhagic Septicaemia in the State.

As regards the supplies made to places outside the State 91,000 doses were supplied to Hyderabad (which is almost double that in the previous year) 1,000 doses to Baroda, 440 doses to Trichur, and 200 doses to Pudukkottai. A note-worthy feature is that this was indented for for the first time during the year from Indore, Sangli, Belgaum and Trivandrum.

Anti Blackquarter Serum:- No Blackquarter Serum was required to be produced during the year under report, as there was a stock of 49,960 doses (15 cc being the unit dose) as opening balance at the beginning of the year. While the demand for this product from the Mysore Civil Veterinary Department was a little less, the supplies made to places outside the State during the year were nearly twice those in the previous year. Thus 25,100 doses were issued to outside places and 3,620 doses to the Civil Veterinary Department as against only 13,040 doses and 5,280 doses respectively during last year. Indents were also received this year for the first time from Sangli and

from Sangli and Belgaum.

Anti Anthrax Serum (Bovine):- 31 he buffaloes (15 discontinued rinderpest serum makers and 16 discontinued Haemorrhagic septicaemia makers) were used and 29,580 doses of Anthrax Serum were produced during this year whereas in the previous year only 25 he buffaloes were used and 26,360 doses were prepared. Out of the total quantity of 54,200 doses of the serum available for issue this year including the opening balance of 24,620 doses, the Mysore Civil Veterinary Department was supplied with 23,180 doses, whereas the places outside the State were supplied with 7,860 doses as against 23,660 doses and only 1,020 doses supplied respectively in the previous year. The demand for this product from Hyderabad was 7½ times that in the previous year, while two more States (viz, Kolhapur and Trivandrum) also indented for this serum for the first time during the year.

Anti Fowl Cholera Serum :- 2 discontinued rinderpest serum makers were used and 17,400 doses (2 cc being the unit dose) of Anti Fowl Cholera Serum were prepared during the year as against 2,050 doses prepared last year. As there was already a stock of 6,050 doses on hand at the beginning of the year, the total quantity of the serum available for issue during the year was 23,450 doses.

As this product was proposed to be tested in the field on an extensive scale, it was supplied free of cost as in previous years

years, both to the Mysore Civil Veterinary Department and to places outside the State for wider trial in the field. Thus, the Mysore Civil Veterinary Department was supplied with 975 doses, and the places outside the State were supplied with 1,100 doses, during the year whereas in the previous year only 800 doses and 125 doses had been supplied respectively. This serum was indented for, for the first time by Hyderabad, Savanur, Palamakottah and Allahabad, during the year under report, while Coorg, Cochin and Colombo indented for 525 doses, 75 doses, and 100 doses respectively as against 50 doses, 50 doses and 25 doses in the previous year.

Proposals will be submitted shortly for charging for this serum as it has been tried in the field quite extensively both within and outside the State and is reported to have given very satisfactory results wherever it has been employed in accordance with the instructions, and as it has also stood the regid tests in the Institute.

Haemorrhagic Septicaemia vaccine:-

1,11,400 doses of Haemorrhagic Septicaemia vaccine (5 c.c. being the unit dose) were prepared and added on to the stock of 7450 doses remaining on hand at the commencement of the year as against 1,03,100 doses prepared in the previous year. However, on account of the general decline in the incidence of Haemorrhagic Septicaemia

Septicaemia in our State, the demand for this serum from the Mysore Civil Veterinary Department was only about half of that in the previous year while there was an appreciable increase in the supplies made to places outside the State. Thus the Mysore Civil Veterinary Department indented for only 32,400 doses of this product while the places outside the State were supplied with 57,400 doses during the year, as against 62,950 doses and 45,100 doses supplied respectively in the previous year. There was a demand for 400 doses of this vaccine from Indore for the first time during the year.

Blackquarter Bacterin:- As the demand for Blackquarter Bacterin from within as well as from outside the State had further increased considerably this year the production of it had also to be correspondingly increased so much so that its out put was doubled. As against only 73,900 doses prepared last year (5 c.c. being the unit dose) 1,48,250 doses were prepared this year and added on to the last year's balance of 18,050 doses, thus raising the total to 1,66,300 doses. Out of this, 1,33,500 doses were supplied to the Mysore Civil Veterinary Department and 4,600 doses to places outside the State as against only 83,600 doses and 600 doses respectively in the previous year.

Although this is a new product introduced into the field only in the latter

latter part of 1933-34 it has become exceedingly popular as evidenced by the fact that there was a demand for 1,38,100 doses of the same during the year under report. While the demand for this product from Pudukottah had increased from 600 doses in the last year to 2,400 doses this year, indents were also received for the first time during this year, from Hyderabad and Pondicherry for 2,000 doses and 200 doses respectively.

Blackquarter filtrate:- As a result of the introduction of Blackquarter Bacterin in preference to Blackquarter filtrate, in view of the former being found to be definitely more efficacious than the latter, the bacterin alone was used in our State, completely dispencing with filtrate, and as such there was no demand at all for the filtrate from the Mysore Civil Veterinary Department; and consequently this was not required to be prepared in large quantities. Besides as there was already on hand a stock of 9,850 doses of filtrate at the beginning of the year only 7,500 doses were prepared this year so as to meet the demands of only Hyderabad where the Bacterin had not yet been tried extensively. But now as they have also begun using bacterin, it is believed that they too will continue to use the same hereafter, in preference to the filtrate, when there would be perhaps no demand at all practically for the latter from anywhere.

~~xxxxxxx~~. However, as against 7,000 doses of filtrate indented for by Hyderabad during last year, 14,000 doses were indented for this year in addition to 2,000 doses of bacterin for the first time.

Sheep pox vaccine:- This is another product for which there was a further increased demand this year both from within and outside the State, the demand from the former being almost double, while from the latter it was 9 times that in the previous year.

Consequently 70 sheep were used and 92,014 doses (1 c.c. being equal to 100 doses) of the vaccine were prepared this year as against only 48,673 doses prepared last year, and in all there were 94,514 doses of this vaccine available for issue during the year under report, including the stock of 2,500 doses that remained at the commencement of the year. 83,900 doses were supplied to the Mysore Civil Veterinary Department and 3,600 doses to places outside the State as against only 49,350 doses and 400 doses ~~xxxxx~~ respectively in the previous year. Pudukottah was supplied with 1,200 doses of the vaccine this year whereas in the preceding year only 400 doses had been supplied. Besides, indents were received for this product for the first time during the year under report from Bhopal,, Agra(U.P.), Morvi State and (Kathaiwar)

Fowl Cholera Vaccine:- As in the case of Fowl Cholera ~~xxxxxx~~ serum, this vaccine was also a new product prepared in the Institute, which was being supplied free of cost to places

places within as well outside the State for trial in the field. The efficacy of this product having now been well established, as could be seen from the good results reported upon from the field, proposals will be submitted to charge for this product also.

As there was sufficient stock on hand, viz., 5,800 doses (1 cc.being the unit dose) at the beginning of the year, no more vaccine was required to be prepared during the year. Out of this stock, 450 doses and 1,050 doses were supplied to places within and outside the State respectively as against 1,700 doses and 600 doses supplied in the preceding year. For this product also indents were received for the first time during the year under report from Hyderabad, Coorg, Trichur, Colombo, Savanur, Pallamakottah and Allahabad.

Revenue and Expenditure:- The total income derived by the sale of biologicals to the Mysore Civil Veterinary Department and to places outside the State and also by the sale of 'Done' animals, etc., during the year under report, amounted to Rs.1,00,600 as against only Rs.74,900/- in the previous year, the revenue from the Mysore Civil Veterinary Department and from places outside the State being Rs.54,300/- and Rs.45,000/- respectively during the year as against only Rs.39,200/- and Rs.35,700/- respectively in the preceding year.

In this connection it is gratifying to note that it was possible to realise during

during this year, a revenue of Rs. 1,00,600/- against an expenditure of only Rs. 67,600 realising thereby a profit of Rs. 33,000/- whereas in the previous year the total revenue amounted to only Rs. 74,900/- against an expenditure of Rs. 75,000/-

While the increase in revenue this year is accounted for by the general increase in supplies made to both within and outside the State, the decrease in expenditure is mainly due to minimising the purchases under "Apparatus, Chemicals and Glassware" and also by effecting economies in every possible way.

Thus it is seen that the working of the Institute during the year under report was very satisfactory from a financial point of view also, in as much as that there was a considerable increase in revenue while there was an appreciable reduction in expenditure as compared with last year.

(vide next page)

EXPERIMENTS & RESEARCH.

Routine Bacteriology & Pathology:- The nature of work under this head continued to be almost the same as in previous years, and thus the main portion of routine Bacteriological work consisted of the following:-

1. Examination of various smears,
2. Sterility tests of bovine and goat adapted Rinderpest Virus, Sera & Vaccines,
3. Determination and Exaltation of virulence of strains of Blackquarter, Haemorrhagic Septicaemia, Fowl Cholera etc,
4. Preparation of various antigens for immunisation and tests,
5. Maintenance of stock cultures etc.

During the year under report 601 samples of Rinderpest Virus, both bovine and goat adapted, 224 samples of sera and vaccines, 114 samples of materials of a miscellaneous nature were subjected to cultural tests - both aerobic and anaerobic, pH estimation of nine samples of sera and 147 samples of culture media was also conducted in addition to the above.

DETAILS OF SMEARS EXAMINED.

Tetanus:-	...	6
Anthrax	...	19
Blackquarter	...	61
Haemorrhagic Septicaemia		414
Pasteurellae	...	282
Thelaria mutans..		526
Rinderpest virus smears		517
Post mortem smears of Baci Nearogen group		294
Total		2,119

Pathology:- This comprised mainly of systematic post mortem examinations of all animals and birds that died after experiments, tests or otherwise in the Institute. Some specimens of pathological interest and a few helminths were collected and added to the museum of the Institute in the course of the work.

DETAILS OF POST MORTEM EXAMINATIONS.

Kind of animal	No. examined.		Total.
	Institute	Research Section.	
Buffaloes	8	-	8
Buffalo bull calves	90	3	93
Bull calves	1	1	2
Goats	92	34	126
Sheep	10	26	36
Bullock	1	2	3
Cow	-	3	3
Horse	1	-	1
Small animals	108	149	257
Poultry	96	104	200
Total ...	407	322	729

The Etiological diagnosis arrived at on post mortem examinations of the above number of 729 animals and birds was as follows:- 52 under rinderpest, 49 under Haemorrhagic Septicaemia, 47 under blackquarter, 70 under Anthrax, 44 under Fowl Cholera, 39 under Rabies and 428 under miscellaneous.

RINDERPEST.

Bovine Virus:- The strain of bovine virus was successfully maintained through buffalo bull calves throughout the year except once when a slight decline in the virulence of the strain was noticed and it had to be passaged through sheep for exaltation. Altogether the number of passages the virus underwent during the year was 43, and 72 buffalo bull calves were used for the purpose with 86% satisfactory reactors and a mortality of 30%.

Goat Adapted Virus:- As was reported last year the two strains of fixed Goat Virus - Muktesar - and Mysore - were pooled together and the mixed strain has since undergone 101 passages through goats and has maintained uniform and characteristic virulence to the Bovines. This has been confirmed periodically by alternate test passages through buffalo bull calves undertaken during the year. 482 he goats were used for Virus production and maintenance of the strain during the year as against 330 goats last year. The percentage of satisfactory reactors was 89 with a mortality of about 28%. It may be of interest to mention in this connection that the superiority of the Goat Virus alone method to the Serum Simultaneous method of combating Rinderpest has been definitely established by the experiments conducted in the Institute here as well as on some herds of Amrit Mahal Cattle, as also by the extensive field inoculations that are being conducted by the Mysore Civil Veterinary Department for over three years. As a result, Goat blood virus alone is being used with great

advantage in almost all outbreaks of Rinderpest in the State, practically eliminating the use of the costlier Rinderpest Serum.

As mentioned in last year's report 213 animals belonging to Amrit Mahal Herd No. 3 were protected with Goat Rinderpest Virus as long ago as February 1933. Subsequently batches of about 25 from the above were being tested with virulent bovine virus periodically for study of the duration of immunity. The test conducted so far has shown that the period of immunity by Goat Virus extends up to 33½ months.

The next test for the study of the further duration of immunity on the remaining batch of the herd is proposed to be taken up shortly.

Goat Tissue Vaccine experiments undertaken during the previous year will be continued during the coming year and field tests in areas where rinderpest occurs periodically will be undertaken to study the comparative value of goat blood virus and spleen virus.

Fowl Cholera:- Both local and foreign virulent strains of pasteurellae avisepticus were maintained by sub cultures and passages through pigeons and fowls. 31 fowls and 28 pigeons were used for the purpose of exalation and finding out the m.l.d. Experiments undertaken to study the minimum lethal dose of the passage cultures have revealed a wide range of variation and even as small a dose as of 1/3,0000 cc. was found lethal to pigeons.

A small quantity of fowl cholera Vaccine was prepared after the method of Morcos and Mahmoud, i.e., by killing cultures by the addition of chemicals such as phenol, formaline, etc, and was tested side by side with heat killed vaccine, and the former was found to be far superior in antigenic value. Hence this method has been adopted for the routine preparation of Fowl Cholera Vaccine.

Anti Fowl Cholera Serum prepared from buffaloes and tested on pigeons, was found to be quite satisfactory.

Haemorrhagic Septicaemia:- Several strains, both local and foreign, of Haemorrhagic Septicaemia virulent culture were maintained by subcultures and animal passages. As the m.l.d used to vary frequently, 24 calves were used during the year for fixing the m.l.d which was found to vary from 0.01 to 0.5 cc. An attenuated (avirulent strain of Haemorrhagic Septicaemia culture was also maintained for immunising Serum makers and calves were tested with doses upto 10 cc. with no untoward result. The immunity of serum makers immunised with the above avirulent cultures was tested with virulent cultures in doses upto 5 cc and they were found to have a solid immunity.

A quantity of anti Haemorrhagic Septicaemia serum of an old brew received from the field was retested and found to retain its potency even after

As the causal organisms of fowl cholera and Haemorrhagic Septicaemia are members of the same group i.e., Pasteurellae, similar experiments as in the case of fowl cholera vaccine were conducted with

with regard to Haemorrhagic Septicaemia Vaccine also and they again proved the superiority of chemcially killed cultures over the heat killed ones. Therefore the former method is in vogue now for the routine preparation of Haemorrhagic Septicaemia Vaccine also.

Six brews of Haemorrhagic Septicaemia Vaccine were prepared during the year, three heat killed and three carbolised, and on tests, the carbolised brews of vaccine were found much more efficacious in antigenic value. 34 buffalo bull calves were used as test animals and 12 as controls for this experiment.

Blackquarter:- Strips of affected muscles kindly sent by Veterinary Inspectors were subjected to cultural and animal tests. The virulent and typical samples were added to our collection and the new strains were incorporated in the preparation of our polyvalent Blackquarter Bacterin.

It is gratifying to note the excellent results of the use of the Bacterin in the field on an extensive scale. Good results were also reported by its use in an out-break of Blackquarter in the Hebbal Farm and in the neighbouring village by the Veterinary Inspector in charge of the Farm Hospital., where the disease was successfully controlled by immediate inoculation with serum followed by a dose of Blackquarter Bacterin after four days. Intravenous injection of Blackquarter serum as a curative measure in the early stages of the disease was also

also observed to be very effective.

As the m.l.d of Blackquarter cultures used to vary, experiments to find out the exact m.l.d had to be conducted on different occasions for the potency tests of Blackquarter Biologicals. The m.l.d., varied from 0.003 to 0.125 cc. and from 0.75 to 1.5 cc, in guineapigs and bovines respectively.

Blackquarter Bacterin:- Eight brews of bacterin amounting to 148000 doses were produced during the year and were tested on bovines and guineapigs for satety and potency with very good results. Bacterin has almost completely replaced the previous Blackquarter Filtrate and all the indents both from the State and places outside are mostly for the former product. Even Hyderabad has of late been indenting for Blackquarter Bacterin.

Sheep-pox:- About the middle of the year 1936-37 it was observed that the strain of the sheep-pox virus maintained in the Institute for the preparation of sheep pox vaccine showed signs of loss of virulence and consequently it was arranged to obtain fresh material from natural cases of sheep-pox from different localities of the State. Materials were received from Tiptur, Hoskote, Challakere and Siddlaghatta and on testing them separately on 12 sheep in four batches of three sheep each, it was observed that the materials received from the first three villages failed to reach, while the one from Siddlaghatta was found highly virulent. This strain was used for the preparation of sheep pox vaccine during the rest of the year. The

The strain is so far successfully maintained and periodical tests for gauging the virulence are being undertaken.

Anti-rabic Vaccine Having studied the methods of the preparation of Anti Rabic vaccine in the Pasteur Institutes at Coonoor, Colombo, Bombay etc, during my deputation in 1936, a few samples of the vaccine (Veterinary) for prophylactic vaccination against rabies in animals were prepared for tests at the beginning of this year. However the preparation of the same is now being carried on in the Research Section.

Fowl-pox:- As indicated in the previous year's report, the work on Fowl-pox was taken up again at the beginning of the year by infecting 8 pigeons with both local and foreign strains of the virus material that had been collected and preserved last year. Most of the birds took up the infection well and material - Fowl pox virus attenuated by passaging through pigeons was collected for further work but latterly this work is also being conducted in the Research Section under the Veterinary Research Officer.

Strangles:- A small quantity of strangles streptococcal vaccine was prepared at the commencement of the year from a strain of streptococci kindly sent by the Imperial Institute of Veterinary Research, Muktesar, but as there was no demand for the same it could not then be given a trial in the field.

GENERAL.

Education:- Twenty-two Veterinary

Veterinary Graduates from different places have undergone short course training in this Institute during the last four years including the following 7 candidates selected for training during the year under report:-

1.	Messrs.	C.T.C. Menon	... (Cochin State)
2.		G.M. Mehta	... (Bhavanagar State)
3.		P.G.R. Naidu	... (Mysore)
4.		B.Chandrasekhar	... (-Do-)
5.		Paul Joseph	... (Cochin State)
6.		F.J. Simon	... Do
7.		L.B. Phadaki	... (Dharwar)

The Institute is becoming increasingly popular as a place of scientific as well as of general interest, attracting every year a number of distinguished visitors, both official and non-official from within and also from outside the State.

During the year under report the Institute had the honour of being graciously visited by His Highness the Maharaja of Mysore, along with the Dewan, and also by His Highness the Maharaja of Gwalior who were pleased to go round all the different section of the Institute evincing a keen interest in their working.

Rajamantrapravina N. Madhava Rao, B.A.B.L., Second Member in Council, Sir John Russel, D.Sc, F.R.S., Dr. Wright, Sir Jagadish Prasad, member of the Viceroy Executive Council, Sir Atul Chatterjee,-Retired High Commissioner for India, and Major Braughton, Col. Olver, Animal Husbandry Expert to the Government of India, and N.C. Mehta, Esq, I.C.S,-Officiating Vice Chairman,

Imperial Council of Agricultural Research, were also pleased to visit the Institute and to go round all the sections.

The following were some of the other distinguished visitors to this Institute during the year under report:-

1. The Agricultural Advisor to the Government of Goa.
2. Mr. Rama Verman, Secretary to the Government of Cochin ~~will~~ ~~Mr~~ Adi K. Seth.
3. Mr. B.K. Badami, Director, Civil Veterinary Department, Hyderabad - Deccan.
4. Kazi Md. Zainula Bedin - Hyderabad Civil service
5. Mr. J.J. Pelczynski, Journalist, Poland.
6. Dr. S. ~~Lakshma~~ Murthy, M.B., D.P.H., D.T.M. & H (Eng) Madras Public Health Service.
7. Mr and Mrs. William H. Conklin, California, U.S.A
8. Miss C.E. Hornby's Girl Students (Mission school)
9. Students of the Cooperative Training Class.
10. Party from Karnataka Sahitya Parishat.
11. Mr. R.W. Ralla Ram, Sciabae, Jumna, Allahabad.
12. Kumararaja sahib of Narsaraopet.
13. Miss Selina Pereira. } (visitors from Ceylon)
14. " Rerna Jayavardhana }
15. " Hilda Nigris. }
16. Mr. Fernando. }
17. Mr. Stanley Jepson - The times of India - Illustrated Weekly - Bombay.
18. Mrs. Stanley Jepson - 13 Marine Lines, Bombay
19. Students of the Intermediate College, Bangalore
20. Mr. & Mrs. John D. Frost, Montreal, Canada.

Acknowledgments:- Before concluding this report I feel it ~~xxx~~ my duty to thank all

those officers of the Agricultural., Live Stock and Civil Veterinary Department of the State who have cooperated in the work of this Institute during the year. My thanks are also due to all those officers both in and outside India, who have kindly arranged to send their publications and the Annual Reports of their departments in exchange for the Annual Reports of this Institute. I also offer my best thanks to the Directors and other Officers of all the Biological Institutes who kindly arranged to send certain bacterial cultures etc, for experiments in this Institute during the year under report.

In concluding this report I wish to make a special mention of the good work done during the year, by Mr. P.U. Nayar, as Bacteriological Assistant and Dr. P.M. Narayanaswami Naidu as Veterinary Research Officer. I also take this opportunity to place on record my deep appreciation of the valuable services rendered by the other staff of this Institute executive as well as ministerial, with great zeal and loyalty although they had to work overtime very ofter to cope with the increasing work in the Institute.

Superintendent,
Serum Institute.

Report of work done in the Research Section of the Mysore Serum Institute during 1936-37.

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(Dr. P.M. Narayanaswami Naidu, B.Sc, L.V.P, Sc.D, F.F.A.S, Veterinary Research Officer.)

My work for the Serum Institute during the period under review, consisted principally of Research work undertaken with a view to prepare and standardise new biological products in the form of vaccines and sera, other than those already manufactured in the Serum Institute. In taking up this work, preference was given to such of the products as are in good demand in the State, but which are being imported from outside.

Biologicals were prepared in each case by several of the different methods in vogue in different countries, and the products so obtained were subjected to searching laboratory tests in order to ascertain their relative merits under the conditions prevailing in this country, taking into consideration their absolute safety both to the animals and the persons handling these products, their efficacy, keeping qualities and economy. New biologicals were prepared against the following diseases:-

1. Rabies in dogs,
2. Anthrax in sheep and goats,
3. Strangles in horses, and
4. Poultry diseases.

1. ANTI RABIC VACCINES:- The increasing education of the general public to the dread of Hydrophobia in human beings transmitted by a rabid dog, is sufficiently impressive to justify the institution

of measures intended to reduce the incidence of this abominable disease in man by prophylactic vaccination of the normal carrier - dog. Ever since the value of pasteur's classical work on anti-rabic vaccination became established, a host of workers, notably from Japan, U.S.A., Italy, France and Germany have contributed to the literature upon the practical application of prophylactic vaccination of dogs against Rabies and in every case data have accumulated to show that a significant decrease in the incidence of this disease in dogs has resulted. In Mysore, it is clear, that, though the institution of measures for the prophylactic inoculation of dogs against Rabies is unlikely to stamp out the ravage atleast within a measurable period of time, it should, if really efficient, provide a barrier between the disease in its natural host, the dog, especially the street dog, and implantation in adventitious hosts such as man and his domesticated animals.

It is also clear, that even for application on a small scale in the field, the vaccine must be innocuous and easily administered. For these reasons, the established methods of vaccinations founded on Pasteur's original formula and its numerous modifications, - which are in vogue in this country - which require repeated injections (7 to 14) over a considerable period (1 to 3 weeks) are not without defects and any investigation upon the relative merits of a particular vaccine can be limited to those which can be given at one or at the most two injections.

The method of dealing with this important and only source of human infection is far from satis-

factory

satisfactory in our State. While anti-rabic vaccinations are made free to persons exposed to the danger of infection from suspected dogs, the dog owner has got to pay a considerable sum to get his animals protected against the disease. At present, the vaccine is got from Coonoor at the cost of the owner, each course of seven injections necessary for protecting one dog costing him from Rs. 6/- to Rs. 7/- which is indeed prohibitive for poor dog owners. The result is, that only a negligible percentage of valuable and pet dogs are given the benefit of these vaccinations, while the others including a large number of ownerless street dogs are left untreated and continue to be a prolific source of danger to human beings. It was therefore thought very desirable to undertake experiments with a view to produce in the State a Vaccine as inexpensive as possible, so as to make it acessible to all owners of dogs and at the same time easy of handling, while being absolutely innocuous and comparable in efficiency to any other imported vaccines.

With these objects in view two different vaccines were prepared.

1. A CARBOLISED GLYCERINISED VACCINE after the method of Umeno and Doi of Japan. In a single dose of 5 cc. injected subcutaneously into an average sized dog (weighing about 15 lbs.), it is said to protect the latter against subsequent infections of the disease for a period of about one year. In Japan over a million dogs are

are said to have been protected with this vaccine ever since its inception and the authors claim more than 90% success for this method of anti-rabic prophylaxis.

Experiments with this vaccine are for the present confined to the laboratory animals - rabbits and guinea-pigs. These were subjected to single subcutaneous injections of 1 cc. and half a cc. of the vaccine respectively. At intervals of 2-3 months, batches of these animals selected at random from the immunised lots, along with sufficient number of unimmunised controls were infected sublingually in rabbits and intra-ocularly in guinea-pigs with a suitable dose of Rabies street virus of proved virulence. These animals are under observation and continue to remain so for atleast six months after infection. Any animal dying within this period is examined carefully and the cause of death ascertained by microscopical, cultural and animal inoculation tests. The experiments are yet inconclusive, but the results so far appear to be encouraging, in as much as, most of the vaccinated animals are still alive although four months have elapsed after infection, whereas all the controls, infected simultaneously with the same dose and strain of street virus succumbed between the 2nd and 3rd week after infection developing typical paralysis.

Whatever its advantages are, one great drawback with this vaccine is its viscidity, which renders its filtration as well as drawing through ordinary syringes difficult. It is also somewhat expensive on account of the large quantities

of glycerine it requires.xx

2. THE ITALIAN MODIFICATION OF SIR SEMPLES CARBOLISED VACCINE:- Excellent results are claimed with the use of this product as a prophylactic measure in only two injections of 5 to 10 cc., subcutaneously at an interval of a week. The vaccine is easier to filter and handle and much cheaper to prepare although its keeping qualities are not so good as the Japanese Vaccine.

Experiments undertaken with this vaccine on a large number of rabbits and guinea-pigs with a view to ascertain its efficacy are promising and augurs a great future to this method of anti-rabic campaign not only in the State, but throughout the country. Opportunities are also being availed of to try this product on the field in case of dogs, whose owners are unable to meet the cost of Coonoor Vaccine. Already five dogs have been vaccinated, three as prophylactic measure only and two after being bitten by a definitely positive rabid dog, taking care to keep them under strict surveillance and constant observation for a reasonable length of time. In case of the bitten dogs the number of injections varied from 4 to 7, depending upon the nearness of the site of bite to the animal's brain. It is now nearly seven months since one of the dogs has been treated with the new vaccine and it has not shown any symptoms suggestive of rabies so far. The other dog was treated only recently and is under observation.

II. ANTHRAX IN SHEEP & GOATS.

Another disease of considerable importance

and which needs immediate attention is Anthrax in sheep and goats.

Severe outbreaks of this disease are taking away a large toll of animals every year, especially in parts of Chitaldurg, Mysore and Tumkur Districts, causing an unaccountable loss to sheep owners, whose sole means of existence appears to be this class of Live Stock.

Prophylactic vaccinations against the disease were being done hitherto with a vaccine imported from Australia. Inspite of this, yearly outbreaks of Anthrax have not only continued to rage among sheep, but constituted as it is, of attenuated live spores of the organisms causing the disease, it has also at times endangered both the live-stock and the persons using them with fatal infections.

Good deal of work has been done on Anthrax immunisation by workers abroad and various methods of vaccinations are being practiced against the disease. Out of these, however, the three worthy of consideration are:-

1. The French "Cuti-Vaccine", after the method of Besredka.
2. The German "Lipoid Vaccine", after the method of Hsruska, and
3. The Italian "Carbozoo or Saponine Vaccine", after the method of Mazzucchi.

In order to give a fair trial to all these vaccines before preferring any one as the best method of preventive vaccination under the prevailing conditions in Mysore, it

was thought necessary to prepare all the three vaccines and subject them to critical tests, both in the laboratory and on the field. The strain of Anthrax bacilli isolated from a natural outbreak of the disease was attenuated at higher temperature until its virulence corresponded to that of classical pasteur II strain got from the Pasteur Institute, Paris, and formed the basis of all the vaccines. The object in selecting the local strain in preference to Pasteur II itself was on account of its non-pathogenicity to human beings, as was evidenced by the entire absence of any malignant pustule or any other untoward effect among the villagers inspite of their handling the Anthrax carcasses freely and using their meat liberally. This latter consideration is of no little importance in view of the risks to which persons handling the vaccine are exposed. Another consideration in chosing the local strain for making the vacines, though of seemingly minor importance, was to increase the efficacy of the product through autogenicity.

All these vaccines were prepared according to the methods described by their authors and extensive laboratory tests undertaken on 62 sheep and 70 goats, in order to ascertain how far if at all, the products were innocuous and efficient. The results of these experiments were very encouraging, in so far as the vaccines proved not only harmless to sheep and goats, but also all these animals definitely resisted a subsequent artificial infection with a dose

of the virulent Anthrax cultures which killed the unvaccinated controls from 18 to 24 hours.

It could be inferred from the above experiments, that all the three vaccines were of equal merits so far as laboratory conditions were concerned and remained to be tested on the field. For this purpose, 9 sheep and ten goats were bought in a village where these animals are faced with yearly outbreaks of the disease and eighteen of these were divided into three batches of six animals each, each batch consisting of three sheep and three goats. One goat was kept as control. Field tests were proposed to be undertaken in the village itself. The batches were kept well separated from each other and received suitable doses of the vaccine each batch getting one particular vaccine. Temperatures were recorded twice daily, morning and evening, and the animals were kept under constant observation throughout the period for noting any ill effects after vaccination. Within three days after vaccination, batches I and II which received Beseredkas's Cuti Vaccine and the Lipoid Vaccine respectively, showed signs of grave illness and began dying until in about five days none of the animals of these two batches survived. Post mortem examination undertaken on the carcasses confirmed the diagnosis for Anthrax. Entirely different was the behaviour of the III batch of animals receiving the Saponine Vaccine. Besides a swelling at the seat of vaccination and a slight rise of temperature on the second and third day, no other obvious symptom of illness

was noticed. After 10 days these animals along with the unvaccinated control were given 0.25 cc. of a highly virulent culture of Anthrax spores. The control died within 24 hours showing typical symptoms of Anthrax, while the vaccinated lot remained unaffected even after a week. In order to know how these animals reacted to a natural outbreak of the disease, they were left in a flock along with unvaccinated ones. As was expected, the disease appeared in the flock after about five months, destroying most of the animals of the flock of nearly 125 heads of sheep and goats. Out of the 14 sheep and 9 goats surviving after the outbreak, were found included the three sheep and three goats protected with Saponine Vaccine. Being convinced of the satisfactory result of preliminary field tests, it was thought to introduce this vaccine as a more general method of prophylaxis against Anthrax in the affected areas. Accordingly 176 animals belonging to one of the leading gentleman of the village - Hirehalli - were protected with Saponine Vaccine; but vefore the immunity established itself, as a result of this measure, some loss of animals could not be avoided in the face of a raging outbreak of the disease prevailing at that time. From the reports received there were 14 deaths among the animals of the flock within about a fortnight after vaccination, after which not a single animal died of Anthrax. On the other hand, nearly 50% of the animals are reported to have succumbed to the disease in the unprotected flocks of the same village. Attempts will be made next year to undertake a more rigorous

campaign of protective vaccinations by the Italian method, before the expected onset of the disease in the village and by this means, it is hoped to get the disease under control. Incidentally, it may be of interest to mention here that in undertaking a work like this, which is the first of its kind in India, the State will have given a good lead towards controlling one of the highly contagious diseases of Live Stock.

III. STRANGLES IN HORSES.

About the end of the year under report, a serious outbreak of Strangles was encountered among the horses of Mysore unit at Mysore, which subsequently spread to the animals of the Mysore lancers at Bangalore and those of the Hesarghatta Farm. Preventive vaccinations with a good strangles vaccine was therefore indicated in order to bring the disease under control and to prevent its spread to healthy animals. Experiments were undertaken to prepare an autogenous vaccine and make it available for protecting the military horses early.* This vaccine was being got hitherto from Muktesar.

IV. POULTRY DISEASES.

A large variety of diseases, most of which fatal to the domestic fowl are prevailing in the State. Literature on tropical poultry diseases and methods of controlling them are, unfortunately, meagre and unsatisfactory, so that the success of making poultry farming a remunerative occupation in the State is a matter of progressive research on problems affecting the health of birds. In view of the endeavours made by the

* vide next page.

* The Vaccine was made ready for use during the beginning of the next official year, viz, 1937-38. Protective vaccination was undertaken on about 600 horses of the Mysore Unit and Mysore Lancers. There have not been any fresh attacks of the disease after vaccinations in the regimental animals.

Government of Mysore to make poultry farming one of the practical items in their extensive programme of rural reconstruction work in the State, it became necessary almost simultaneously, to institute research work on poultry diseases and their control. For this reason a scheme of research work " On Prophylactic methods against poultry diseases in the State" costing about Rs. 2,500/- and to operate next year was submitted to the Government and received their kind sanction. In undertaking the work suggested in the scheme, Mysore is again foremost to start a work of this kind, on what may be regarded as one of the most pressing Live-stock problems of the Country at present.

As directed by the Government in their [redacted] Order No. D. 8583-85-C.V. 88-36-2, dated 5/10th June 1937, a more elaborate scheme extending over a period of five years has also been prepared and submitted to them for placing before the Animal Husbandry Wing Meeting of the Imperial Council of Agricultural Research, when they meet during October next at Delhi for financing half the total cost of the scheme, the other half being met by the State.

In the meanwhile work has already been started on the survey of poultry diseases prevailing in the State and methods of controlling them. The latter implies the working out of specific products such as vaccines and sera and chemotherapeutics.

a) Specific products:- The only product being prepared and tested under this head is the Chicken-pox vaccine. Last years work on the preparation of this vaccine, which was being got hitherto from Muktesar, was continued. Vaccines were prepared by different methods, but the emulsion form was preferred to the dry powder-form, as the latter failed to satisfy all the laboratory and field tests to which it was put.

The emulsion of fluid vaccine consisted of a fine suspension of the pox virus obtained either directly from the fowl or after a series of passages through the pigeons, in 80% sterile glycerine. The following virus materials were used:-

1. Pigeon pox Virus.
2. Attenuated Fowl pox Virus (Attenuation brought about by passaging Fowl Pox virus in pigeons).
3. Attenuated Fowl Pox Virus (Attenuation brought about by drying F.P.Virus at 40° C., and in vacuum over P_2O_5).
4. Fowl pox Virus.

Laboratory tests undertaken with these vaccines showed that pure pigeon pox virus failed to confer any immunity to chicks against the disease. The safest vaccine to use was the pigeon-passaged virus. In no instance was any severe reaction observed. Field tests were done with this vaccine on nearly 500 chicks belonging to some private individuals round about Bangalore, in the course of a natural outbreak of the disease. The result was quite satisfactory, in that no further attacks were encountered among the vaccinated lot, while many of the unvaccinated controls succumbed to the disease.

But in a subsequent outbreak of the same disease in this flock only about three months later, the birds were found to be no longer immune and most of them developed the disease indicating that the immunity conferred by this vaccine was probably not of longer duration. The other vaccines will also be put to test in course of time in order to compare their efficacy.

Chemotherapeutic measures:- Among the other measures undertaken these worthy of mention are:-

1. Dosing for worms :- As worms were found to be causing considerable damage to the poultry both directly and indirectly, it was necessary to undertakex the study of different anthelmentics, so as to ultimately prepare a composition most suitable for the complete eradication of intestinal worms, especially the round worms and the tape worms. These drugs are being tried on poultry.

2. Treatment of certain specific diseases of the alimentary tract:- Prophylactic vaccinations against most of the specific diseases of the house-fowl, and especially of the alimentary tract, have so far been unsuccessful, excepting perhaps in case of Fowl typhoid. Bearing in mind the powerful eligodynamic action of metals on some of the specific disease-producing agencies, it was proposed to work out xf a line of attack of this important class of diseases through prescriptions containing principally of metals in colloidal state. Colloidal silver which is the easiest to obtain was therefore chosen and two compositions " Gastrase" and "Ventrase" were prepared; Ventrase for diseases

accompanied by profuse diarrhoea and Gastrase in ailments without this complication. These mixtures are being tried in such diseases as infectious enteritis, Ranikhet disease, Coccidiosis, Pullorum disease etc, with encouraging results.

3. Similarly a cold mixture against common colds in chicks has been made and a head dip or head wash is evolved for treating cases of Roup.

4. Studies undertaken on an exceedingly common trouble of the Farm-birds in Mysore, viz, Neurolymphomatosis of Range paralysis, have suggested the incrimination of a Vitamin deficiency, especially that of Vatamin C, as the probable cause of this disease. Special feed and greens particularly rich in this vitamin are being given to these birds. Although it is too early to claim any definite success to this line of treatment, the results being arrived at are undoubtedly of great value.

A systematic investigation on this and other problems will be undertaken next year under the auspices of the scheme sanctioned by the Government for this purpose.

APPENDIX. No. II

Statement showing the quantity of Rinderpest Goat Virus produced, issued and balance remaining monthly for the year 1936-37.

Month		Balance at the beginning of the month.	Quantity produced during the month	Total	Quantity supplied to		Quantity used in the Institute including wastage etc.	Total.	Stock of Goat Virus on the last day of the month.
					Civil Veterinary Department.	Outside the State.			
		c.c.	c.c.	c.c.	c.c.	c.c.	c.c.	c.c.	c.c.
July	1936	195	1335	1530	255	105	1065	1425	105
August	"	105	1065	1170	-	105	855	960	210
September	"	210	1170	1380	360	270	660	1290	90
October	"	90	1245	1335	825	345	165	1335	-
November	"	-	3960	3960	2475	135	300	2910	1050
December	"	1050	8130	9180	7125	195	1050	8370	810
January	1937	810	9270	10530	3495	765	4485	8745	1785
February	"	1785	8850	10635	6090	1110	2340	9540	1095
March	"	1095	9915	11010	4785	1110	3630	9525	1485
April	"	1485	10005	11490	6825	1230	1770	9825	1665
May	"	1665	4470	6135	1950	810	2325	5085	1050
June	"	1050	3150	4200	2205	225	1620	4110	90
For the Year.		195	63015	63210	36390	6405	20325	63120	90

Superintendent, Serum Institute.

APPENDIX III

Statement showing the quantity of Anti Rinderpest Serum produced, supplied and balance remaining monthly for the year 1936-37.

Month		Balance at the beginning of the month.	Quantity produced during the month.	Total	Quantity supplied to		Quantity of serum used in the Institute including wastage etc.	Total	Stock of Serum on the last day of the month.
					Civil Veterinary Department.	Outside the State.			
		Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July	1936	54,350	-	54,350	-	12,000	50	12050	42,300
August	"	42,300	27,800	70,100	-	11,000	150	11150	58,950
September	"	58,950	-	58,950	2,500	16,250	-	18750	40,200
October	"	40,200	-	40,200	-	10,250	600	10850	29,350
November	"	29,350	77,750	1,07,100	3,300	20,000	-	23300	83,800
December	"	83,800	-	83,800	4,100	12,600	50	16750	67,050
January	1937	67,050	-	67,050	1,550	11,000	-	12550	54,500
February	"	54,500	-	54,500	7,800	14,000	-	21800	32,700
March	"	32,700	-	32,700	5,500	10,000	-	15500	17,200
April	"	17,200	-	17,200	2,500	14,000	500	17000	200
May	"	200	77,700	77,900	2,200	2,000	-	4200	73,700
June	"	73,700	-	73,700	750	10,100	-	10850	62,850
For the Year -		57,350	1,83,250	2, 37,600	30,200	1,43,200	1,350	1,74,750	

Superintendent, Serum Institute.

APPENDIX. IV.

Statement showing the quantity of Anti Haemorrhagic Septicaemia Serum produced, issued and balance remaining monthly for the year 1936-37.

Month		Balance at the beginning of the month.	Quantity produced during the month.	Total	Quantity supplied to		Quantity of Serum used in the Institute including wastage etc.	Total	Stock of Serum on the last day of the month.
					Civil Veterinary Department.	Outside the State.			
		Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July	1936	50,600	-	50,600	1,160	10,740	-	11,900	38,700
August	"	38,700	-	38,700	900	15,260	-	16,160	22,540
September	"	22,540	-	22,540	1,860	16,140	-	18,000	4,540
October	"	4,540	3,200	7,740	1,000	5,360	-	6,360	1,380
November	"	1,380	9,960	11,340	2,020	6,100	-	8,120	3,220
December	"	3,220	10,700	13,920	-	-	-	-	13,920
January	1937	13,920	-	13,920	-	4,100	-	4,100	9,820
February	"	9,820	-	9,820	20	5,340	-	5,360	4,460
March	"	4,460	-	4,460	1,920	-	-	1,920	2,540
April	"	2,540	30,980	33,520	820	10,000	-	10,820	22,700
May	"	22,700	-	22,700	720	15,200	-	15,920	6,780
June	"	6,780	-	6,780	200	6,160	-	6,360	420
For the year		50,600	54,840	1,05,440	10,620	94,400	-	1,05,020	-

Superintendent, Serum Institute.

APPENDIX. V.

Statement showing the quantity of Anti-Blackquarter Serum produced, issued and balance remaining monthly for the year 1936-37

Month		Balance at the beginning of the month.	Quantity produced during the month.	Total	Quantity supplied to		Quantity of Serum used in the Institute including wastage etc.	Quantity used at Ajjampur.	Total	Stock on hand on the last day of the month.
					Civil Veterinary Department.	Outside the State.				
		Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July	1936	49,960	-	49,960	80	5,300	-	-	5,380	44,580
August	"	44,580	-	44,580	400	2,500	-	-	2,900	41,680
September	"	41,680	-	41,680	360	3,500	-	-	3,860	37,820
October	"	37,820	-	37,820	420	200	-	-	620	37,200
November	"	37,200	-	37,200	120	600	-	-	720	36,480
December	"	36,480	-	36,480	300	-	-	-	300	36,180
January	1937	36,180	-	36,180	-	500	-	-	500	35,680
February	"	35,680	-	35,680	-	5,000	-	-	5,000	30,680
March	"	30,680	-	30,680	600	500	-	-	1,100	29,580
April	"	29,580	-	29,580	700	-	-	-	700	28,880
May	"	28,880	-	28,880	120	5,000	-	-	5,120	23,760
June	"	23,760	-	23,760	520	2,000	-	-	2,520	21,240
For the year.		49,960	-	49,960	3,620	25,100	-	-	28,720	-

Superintendent, Serum Institute.

APPENDIX. VI.

Statement showing the quantity of Anti Anthrax Serum produced, issued and balance remaining monthly for the year 1936-37

Month		Balance at the beginning of the month.	Quantity produced during the month.	Total	Quantity supplied to		Quantity of Serum used in the Institute including wastage etc.	Total	Stock of Serum on the last day of the month.
					Civil Veterinary Department.	Outside the State.			
		Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July	1936	24,620	-	24,620	3,000	-	-	3,000	21,620
August	"	21,620	-	21,620	3,520	1,000	-	4,520	17,100
September	"	17,100	-	17,100	3,060	500	80	3,640	13,460
October	"	13,460	-	13,460	500	-	200	700	12,760
November	"	12,760	-	12,760	2,200	2,100	-	4,300	8,460
December	"	8,460	-	8,460	-	-	-	-	8,460
January	1937	8,460	-	8,460	300	-	80	380	8,080
Febraury	"	8,080	-	8,080	680	-	-	680	7,400
March	"	7,400	-	7,400	1,420	-	-	1,420	5,980
April	"	5,980	4,380	10,360	4,020	4,260	-	8,280	2,080
May	"	2,080	25,200	27,280	3,680	-	-	3,680	23,600
June	"	23,600	-	23,600	800	-	-	800	22,800
Forwarded		24,620	29,580	54,200	23,180	7,860	360	31,400	...

Superintendent, Serum Institute.

APPENDIX. VII

Statement showing the quantity of Anti Fowl Cholera Serum produced, issued and balance remaining monthly for the year 1936-37.

Month		Balance at the beginning of the month.	Quantity produced during the month.	Total	Quantity supplied to		Quantity used in the Institute including wastage etc.	Total	Stock of Serum on the last day of the month.
					Civil Veterinary Department.	Outside the State.			
		Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July	1936	6,050	-	6,050	275	-	-	275	5,775
August	"	5,775	-	5,775	200	200	-	400	5,375
September	"	5,375	-	5,375	~~125~~	125	-	125	5,250
October	"	5,250	-	5,250	-	50	25	75	5,175
November	"	5,175	-	5,175	-	50	-	50	5,125
December	"	5,125	-	5,125	225	-	25	250	4,875
January	1937	4,875	-	4,875	-	-	-	-	4,875
February	"	4,875	-	4,875	-	-	-	-	4,875
March	"	4,875	-	4,875	100	150	-	250	4,625
April	"	4,625	-	4,625	175	225	-	400	4,225
May	"	4,225	-	4,225	-	-	-	-	4,225
June	"	4,225	17,400	21,625	-	300	-	300	21,325
For the year -		6,050	17,400	23,450	975	1,100	50	2,125	

Superintendent, Serum Institute.

APPENDIX. VIII

Statement showing the quantity of Haemorrhagic Septicaemia Vaccine, prepared, issued and balance remaining monthly for the year 1936-37.

Month		Balance at the beginning of the month.	Quantity produced during the month.	Total	Quantity supplied to		Quantity of Vaccine used in the Institute including wastage etc.	Total	Stock of Vaccine on the last day of the month.
					Civil Veterinary Department.	Outside the State.			
		Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July	1936	7,450	24,500	31,950	12,350	8,300	-	20,650	11,300
August	"	11,300	12,100	23,400	3,100	4,000	-	7,100	16,300
September	"	16,300	27,400	43,700	2,400	10,000	100	12,500	31,200
October	"	31,200	-	31,200	7,100	3,000	-	10,100	21,100
November	"	21,100	-	21,100	1,150	4,000	-	5,150	15,950
December	"	15,950	-	15,950	500	-	-	500	15,450
January	1937	15,450	-	15,450	200	5,000	-	5,200	10,250
February	"	10,250	-	10,250	700	5,000	-	5,700	4,550
March	"	4,550	14,250	18,800	-	5,000	-	5,000	13,800
April	"	13,800	-	13,800	1,650	5,000	-	6,650	7,150
May	"	7,150	10,000	17,150	1,350	6,000	150	7,500	9,650
June	"	9,650	23,150	32,800	1,900	2,100	-	4,000	28,800
For the year -		7,450	1,11,400	1,18,850	32,400	57,400	250	90,050	

Superintendent, Serum Institute.

APPENDIX. IX.

State-m ent showing the quantity of Blackquarter Filtrate prepared, issued and balance remaining month for the year 1936-37

Month		Balance at the beginning of the month.	Quantity produced during the month.	Total	Quantity supplied to		Quantity of Filtrate used in the Institute including wastage etc.	Total	Stock of Filtrate on the last day of the month.
					Civil Veterinary Department.	Outside the State.			
		Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July	1936	9,850	-	9,850	-	4,000	-	4,000	5,850
August	"	5,850	-	5,850	-	3,000	-	3,000	2,850
September	"	2,850	-	2,850	-	-	-	-	2,850
October	"	2,850	7,500	10,350	-	3,000	-	3,000	7,350
November	"	7,350	-	7,350	-	-	-	-	7,350
December	"	7,350	-	7,350	-	-	-	-	7,350
January	1937	7,350	-	7,350	-	-	-	-	7,350
February	"	7,350	-	7,350	-	-	-	-	7,350
March	"	7,350	-	7,350	-	-	-	-	7,350
April	"	7,350	-	7,350	-	-	-	-	7,350
May	"	7,350	-	7,350		2,000	-	2,000	5,350
June	"	5,350	-	5,350	-	2,000	-	2,000	3,350
For the year ...		9,850	7,500	17,350	-	14,000	-	14,000	

Superintendent, Serum Institute.

APPENDIX. X

Statement showing the quantity of Blackquarter Bacterin prepared, issued and balance remaining monthly for the year 1936-37.

Month		Balance at the beginning of the month.	Quantity produced during the month.	Total	Quantity supplied to		Quantity of Bacterin used in the Institute including wastage, etc.	Total	Stock of Bacterin on the last day of the month.
					Civil Veterinary Department.	Outside the State.			
		Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July	1936	18,050	-	18,050	14,400	300	-	14,700	3,350
August	"	3,350	14,650	18,000	4,900	2,500	-	7,400	10,600
September	"	10,600	11,100	21,700	9,400	500	-	9,900	11,800
October	"	11,800	15,550	27,350	12,200	-	-	12,200	15,150
November	"	15,150	-	15,150	5,800	700	-	6,500	8,650
December	"	8,650	-	8,650	3,900	-	-	3,900	4,750
January	1937	4,750	12,750	17,500	2,200	100	-	2,300	15,200
February	"	15,200	-	15,200	8,750	-	-	8,750	6,450
March	"	6,450	20,950	27,400	11,600	500	-	12,100	15,300
April	"	15,300	4,200	19,500	17,700	-	-	17,700	1,800
May	"	1,800	17,850	19,650	19,300	-	-	19,300	350
June	"	350	51,200	51,550	23,350	-	-	23,350	28,200
For the year		18,050	1,48,250	1,66,300	1,33,500	4,600	-	1,38,100	

Superintendent, Serum Institute.

APPENDIX. XI

State-ment showing the quantity of Sheep-pox Vaccine prepared, issued and balance remaining monthly for the year 1936-37

Month		Balance at the beginning of the month.	Quantity produced during the month.	Total	Quantity supplied to		Quantity of Vaccine used in the Institute including wastage, etc.	Total	Stock of Vaccine on the last day of the month.
					Civil Veterinary Department.	Outside the State.			
		c.c.	c.c.	c.c.	c.c.	c.c.	c.c.	c.c.	c.c.
July	1936	25	67	92	85	-	-	85	7
August	"	7	67	74	46	4 plus 2 cc sent to Madras for experiments	4	56	18
September	"	18	40	58	27	-	-	27	31
October	"	31	-	31	11	-	-	11	20
November	"	20	50	70	42	2	-	44	26
December	"	26	105	131	68	-	-	68	63
January	1937	63	270	333	187	-	8.00	195	138
February	"	138	54	192	90	4	-	94	98
March	"	98	40	138	125	4	9	138	-
April	"	-	87.145	87.145	53	5	17.145	75.145	12
May	"	12	80	92	49	10	-	59	33
June	"	33	60	93	56	7	6	69	24
For the Year		25	920.145	945.145	839	36 plus 2 sent to Madras for experiments.	44.145	921.145	

Superintendent, Serum Institute.

APPENDIX. XII

Statement showing the quantity of Fowl Cholera Vaccine produced, issued and balance remaining monthly for the year 1936-37

Month		Balance at the beginning of the month.	Quantity produced during the month.	Total.	Quantity supplied to		Quantity of Vaccine used in the Institute including wastage etc.	Total	Stock of Vaccine on the last day of the month.
					Civil Veterinary Department.	Outside the State.			
		Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July	1936	5,800	-	5,800	-	-	-	-	5,800
August	"	5,800	-	5,800	-	200	-	200	5,600
September	"	5,600	-	5,600	-	100	-	100	5,500
October	"	5,500	-	5,500	-	50	50	100	5,400
November	"	5,400	-	5,400	-	100	50	150	5,250
December	"	5,250	-	5,250	100	-	-	100	5,150
January	1937	5,150	-	5,150	-	-	-	-	5,150
February	"	5,150	-	5,150	-	-	-	-	5,150
March	"	5,150	-	5,150	50	200	100	350	4,800
April	"	4,800	-	4,800	300	200	-	500	4,300
May	"	4,300	-	4,300	-	-	-	-	4,300
June	"	4,300	-	4,300	[illegible]	200	-	200	4,100
For the year		5,800	-	5,800	450	1,050	200	1,700	

Superintendent, Serum Institute.

APPENDIX XIII

Statement showing the quantities of Sera and other products supplied and balances remaining during the year 1936-37.

Name of product.	Opening balance	Quantity produced	Total	Quantity supplied to: Civil Veterinary Department.	Quantity supplied to: Outside the Station	Quantity used in the Institute including wastage etc.	Total	Stock on hand at the close of the year.
1) Rinderpest bull virus	-	353 ozs. or 8825 c.c.	353 ozs. or 8825 c.c.	29 ozs. or 725 c.c.	1 oz. or 25 c.c.	317 ozs. or 7925 c.c.	347 ozs. or 8675 c.c.	6 ozs. or 150 c.c.
2) Rinderpest goat virus	195 c.c.	63,015 c.c.	63,210 c.c.	36,390 c.c.	6,4[illegible]	20,325 c.c.	63,120 cc	90 c.c.
3) Anti- Rinderpest Serum	54,350	1,83,250	2,37,600	30,200	1,43[illegible]00	1,350	1,74,750	62,850
4) Anti-Haem-orrhagic Septicaem ia Serum	50,600	54,840	1,05,440	10,620	9[illegible]00	-	1,05,020	420
5) Anti-Blackquarter Serum	49,960	-	49,960	3,620	25[illegible]00	-	28,720	21,240
6) Anti-Anthrax Serum	24,620	29,580	54,200	23,180	7[illegible]60	360	31,400	22,800
7) Anti-Fowl cholera Serum	6,050	17,400	23,450	975	1[illegible]00	50	2,125	21,325
8) Haemorrhagic Septi-caemia Vaccine	7,450	1,11,400	1,18,850	32,400	57[illegible]400	250	90,050	28,800
9) Blackquarter Filtrate	9,850	7,500	17,350	-	1[illegible]000	-	14,000	3,350
10) Blackqu arter Bacterin	18,050	1,48,250	1,66,300	1,33,500	[illegible]600	-	1,38,100	28,200
11) Sheep pox vaccine	25.000	920.145	945.145	839.000	36[illegible]000 plus 2[illegible]000 sent to Madras for experiments	44.145	921.145	24.000 c.c.

Appendix. No. XV

Details of indents received for the first time during the year 1936-37.

Sl. No.	Name of place.	Name of product.	Quantity supplied.	Remarks.
			Doses	
1.	Kolhapur	Anti Rinderpest Serum	5,000	
		Anti Anthrax Serum	260	
		Rinderpest Goat Virus	2,040 cc.	
2.	Ujjain	Anti Rinderpest Serum	100	
3.	Indore	Anti Rinderpest Serum	6,000	
		Haemorrhagic Septicaemia Serum	860	
		Haemorrhagic Septicaemia Vaccine	400	
		Rinderpest Goat Virus	840 cc.	
4.	Bhopal	Anti Rinderpest Serum	1,000	
		Sheep-pox Vaccine	4 cc.	
5.	Bhavanagar	Anti Rinderpest Serum	1,000	
		Rinderpest Bovine Virus	25 cc.	
		Rinderpest Goat Virus	510 cc.	
6.	Savanur	Anti Rinderpest Serum	250	
		Rinderpest Goat Virus	1,230 cc.	
		Anti Fowl Cholera Serum	50	
		Fowl Cholera Vaccine	50	
7.	Jodhpur	Anti Rinderpest Serum	1,000	

APPENDIX XVI

Table showing the results of smears examined during the year 1936-37.

Disease suspected	Number of smears examined			Total
	Positive	Doubtful.	Negative.	
Tetanus	3	1	2	6
Anthrax	12	1	6	19
Blackquarter	59	-	2	61
Haemorrhagic septicaemia ...	408	1	5	414
Pasteurella ...	273	3	6	282
Theilaria mutans ...	88	-	438	526
Rinderpest virus smears ...	-	-	517	517
Post mortem smears of Baci Nearogen group	121	2	171	294
Total				2119

Superintendent,
Serum Institute.

APPENDIX X

Statement of Revenue and Expenditure of the Mysore Serum Institute for the year 1936-37.

Rs.1,604-13-6	Sale of done animals	Revenue
Rs. 6- 4-0	Sale of manure etc.	
53,984- 0-0	Sale of sera and vaccines to Within the State	
45,043-11-0	Outside the State	
Rs 1,00,638-12-6	Total	
7,376- 3-0	Salaries	Expenditure
32,940-12-0	Establishment	
608- 0-0	Travelling allowance.	
5,610-11-8	Purchase of animals for serum and virus production.	
7,276-11-2	Feeding charges	
6,640-1-6	Chemicals & Glassware.	
6,611-11-10	Contingencies	
558- 0-0	Buildings & other charges	
Rs 67,622- 3-7	Total	

Superintendent
Serum Institute.

Appendix XVII

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Price list of Biological Products prepared in the Mysore Serum Institute, Hebbal, Bangalore.

	Name of product	Total contents in a bottle	Unit dose for charging	Cost per unit dose
				Rs. a. p.
1.	Anti Rinderpest Serum ...	250 cc. or 50 doses ...	5 cc.	0 1 6
2.	Anti Blackquarter Serum.	300 cc. or 20 doses ...	15 cc.	0 4 0
3.	Anti Hæmorrhagic Septicæmia Serum.	Do ...	15 cc.	0 4 0
4.	Anti Anthrax Serum ...	Do ...	15 cc.	0 4 0
5.	Hæmorrhagic Septicæmia Vaccine.	250 cc. or 50 doses ...	5 cc.	0 2 0
6.	Blackquarter Filtrate ...	Do ...	5 cc.	0 3 6
7.	Blackquarter Bacterin ...	Do ...	5 cc.	0 3 6
8.	Sheep-pox Vaccine (supplied in ampoules).	100 doses in one cc. ampoule	1 cc.	0 6 0 (per 100 doses of 1 cc.)
9.	Rinderpest Bovine Virus (supplied in 1 oz. and 2 oz. bottles).	25 cc. or 25 doses ...	1 cc.	0 1 0
10.	Rinderpest Goat Virus (supplied in 1 oz. bottle).	15 cc. in 1 oz. bottle	15 cc.	3 8 0 (per 15 cc.
11.	Fowl Cholera Serum	50 cc. in 2 oz. bottles, supplied free of charge at present.		
12.	Fowl Cholera Vaccine			

The above products are supplied on indents received from qualified Veterinarians or from Government Officers.

The minimum quantity of each product that can be supplied at a time is one bottle as noted in column 2.

These rates are for free delivery at the Institute premises and are inclusive of the cost of packing, cases and bottles. Cart hire is charged at Rs. 1-8-0 per cart, per trip, when arranging for despatch of the consignments by Railway parcel.

Credit is allowed to the customers for the empties returned at Re. 0-12-0 per undamaged standard big case and at one anna for each standard half pint bottle.

The Institute cannot be held responsible for any breakages or losses in transit.

Indents received from Veterinarians other than Government Officers are complied with by V. P. P.

S. D. ACHAR,

Superintendent, Serum Institute.

For full particulars, please address:—

THE SUPERINTENDENT,

Mysore Serum Institute,

Hebbal-Bangalore (S. India).

Appendix F G—1]

SUBJECT .....

.....

.....

67

Section CV

File No. 24-37

Serial No. 2

Diary No. of letter replied to.....

No. D 3467
1 Report

To

The Superintendent, Govt Printing,
Bangalore.

General and Revenue Secretariat

( )

the *193* .

Sir,

I am directed to forward herewith the administration report of the Mysore Secretariat for the year 1936-37 to-gether with the review of the Dist Offices & to request that the same may be caused to be set in type & the usual number of copies as noted in the margin printed & kept ready for being bound with the Govt review when will be sent to you in due course.

Two proof copies may

Date of issue 10-11-1937

Signed by Mr K Subba Rao

150 copies to Revs Office
100 copies to the Dist Offices.

List of enclosures.....

Copied by .....

Examined by.....

WD 0521—GPB—30,000—12-3-37 of the Report

may be kindly arranged to be sent
direct to the Dir Gen/Sec for
verification & approval before final
copies are struck off.

Yours etc.

6.11.37
for Secy

Memo No D3468

Copy to the Dir Gen.
with ref to his letter No Lic 247-
He/105-137-3 dt 1/11/37

B.O

6.11.37
for Secy

9/11

GOVERNMENT OF HIS HIGHNESS THE MAHARAJA OF MYSORE

General and Revenue Secretariat

No. D 3467/

Dated, Bangalore, 9th November 193 7

From

The *Secretary to the Government of His Highness the Maharaja of Mysore, Development Department.*

To

The Superintendent,
Government Printing,
Bangalore.

Sir,

I am directed to forward herewith, the administration repor of the Mysore Serum Institute for the year 1936-37, together with the review of the Director of Agriculture and to request that the same may be caused to be set in type and the usual number of copies

150 copies to this office 100 copies to the Director of Agriculture.	as noted in the margin printed and kept ready for being

bound with the Government review thereon which will be sent to you in due course.

Two proof copies of the report may be kindly arranged to be sent direct to the Director of Agriculture for verification and approval before final copies are struck off.

I have the honour to be,
Sir,
Your most obedient servant,

(Signed) M. Venkatanaranappa.
Secretary to Government,
Development Department.

....

Memo No. D 3468

Bangalore, 9th November 1937.

Copy of the above is forwarded with compliments to the Director of Agriculture with reference to his letter No.Roc.287-Hc.105/37-38 dated 1st November 1937.

By Order,

for Secretary to Government,
Development Department.

6

Proceedings of the Government of His Highness the Maharaja of Mysore.

...

Read:-

Letter No.Roc.287-Hc.105/37-38 dated the 1st Novr.1937 from the Director of Agriculture submitting the administration report of the Mysore Serum Institute for the year 1936-37 with his review thereon.

Order No. D5786-87 /CN 24-37-3

Bangalore, 8-2-38

Recorded.

Page 1

The Mysore Serum Institute continued to manufacture sera and vaccines on a large scale for controlling important contagious diseases of live-stock and poultry in the State. It is gratifying to note that the demand for the products of the Institute from several places outside the State considerably increased during the year, the total quantity supplied being 3,59,000 unit ~~does~~ doses against 3,16,000 unit ~~does~~ doses during the previous year. Indents were, for the first time, received from important Indian States. There was an increase in the local demand for rinderpest serum and rinderpest virus due to a greater

70

greater incidence of rinderpest in the State during the year. Among the new preparations of the Institute may be mentioned vaccines etc., against rabies in dogs and other animals, anthrax in sheep and cattle, strangles in horses and chicken-pox in poultry. Among the more important diseases under investigation by the Veterinary Research Officer were polypoid growths among cattle of the Rayankere dairy, gastroenteritis of malnad cattle and poultry diseases. A detailed scheme on prophylactic methods against diseases affecting poultry in the State extending over a period of five years was sent to the Imperial Council of Agricultural Research for consideration.

The revenue realised and the expenditure incurred by the Institute during the year were Rs.1,00,600 and Rs.67,600 against Rs.74,900 and Rs.75,000 respectively during the previous year, resulting in a profit of Rs.33,000 which was due to the general increase in supplies made.

The

71

The work of the Institute continued to be satisfactory.

Secretary to Government
Development Department

To

The Director of Agriculture.

The Comptroller to Govt.

vvk.

PROCEEDINGS OF THE GOVERNMENT OF HIS HIGHNESS
THE MAHARAJA OF MYSORE.

72

R E A D:-

Letter No. Roc.287-Hc.105/37-38 dated the 1st November 1937, from the Director of Agriculture submitting the administration report of the Mysore Serum Institute for the year 1936-37 with his review thereon.

ORDER NO. D 5786-87/C.V.24-37-3

Dated, Bangalore, 3rd February 1938.

85

R E C O R D E D.

The Mysore Serum Institute continued to manufacture sera and vaccines on a large scale for controlling important contagious diseases of live-stock and poultry in the State. It is gratifying to note that the demand for the products of the Institute from several places outside the State considerably increased during the year, the total quantity supplied being 3,59,000 unit doses againt 3,16,000 unit doses during the previous year. Indents were, for the first time, received from important Indian States. There was an increase in the local demand for rinderpest serum and rinderpest virus due to a greater incidence of rinderpest in the State during the year. Among the new preparations of the Institute may be mentioned vaccines etc., against rabies in dogs and other animals, anthrax in sheep and cattle, strangles in horses and chicken-pox in poultry. A detailed scheme on prohylactic methods against diseases affecting poultry in the State extending over a period of five years was sent to the Imperial Council of Agricultural Research for consideration.

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The work of the Institute continued to be satisfactory.

Secretary to Government.
Development Department.

To

The Director of Agriculture.

The Comptroller to Government.

S.V.K. 6.

App. F. VI, G. 10

Government of His Highness the Maharaja of Mysore.

GENERAL AND REVENUE DEPARTMENTS

P.B. No 25 Enl

Administration report

Review the ——— of the Mysore Game Preservation for the year 1936-37

8-2-38

G. O. No. D 5786-87/C.V.24-37-3 DATED 8-2-38

May this be

i. printed ? Yes

ii. treated as a standing order ?

iii. published in the Gazette, English Part ?

iv. translated ?

v. placed at the disposal of the Press ?

vi. published in the Gazette, Kannada Part ?

No. To be treated as confidential

Put up for orders

Sd

20 more copies for review

Government of his highness the Maharaja of Mysore.

GENERAL AND REVENUE DEPARTMENTS.

G. O. No. D. 5786-87—C. V. 24-37-3, dated 3rd—8th February 1938.

Administration Report.

Reviews the —— of the Mysore Serum Institute for the year 1936-37.

READ—

Letter No. R. O. C. 287—Hc. 105—37-38, dated the 1st November 1937, from the Director of Agriculture, submitting the Administration Report of the Mysore Serum Institute for the year 1936-37 with his review thereon.

ORDER No. D. 5786-87—C. V. 24-37-3, DATED BANGALORE, THE 3RD—8TH FEBRUARY 1938.

Recorded.

2. The Mysore Serum Institute continued to manufacture sera and vaccines on a large scale for controlling important contagious diseases of live-stock and poultry in the State. It is gratifying to note that the demand for the products of the Institute from several places outside the State considerably increased during the year, the total quantity supplied being 3,59,000 unit doses against 3,16,000 unit doses during the previous year. Indents were, for the first time, received from important Indian States. There was an increase in the local demand for rinderpest serum and rinderpest virus due to a greater incidence of rinderpest in the State during the year. Among the new preparations of the Institute may be mentioned vaccines etc., against rabies in dogs and other animals, anthrax in sheep and cattle, strangles in horses and chicken-pox in poultry. A detailed scheme on prophylactic methods against diseases affecting poultry in the State extending over a period of five years was sent to the Imperial Council of Agricultural Research for consideration.

3. The revenue realised and the expenditure incurred by the Institute during the year were Rs. 1,00,600 and Rs. 67,600 against Rs. 74,900 and Rs. 75,000 respectively, during the previous year, resulting in a profit of Rs. 33,000 which was due to the general increase in supplies made.

4. The work of the Institute continued to be satisfactory.

M. VENKATANARANAPPA,
Secretary to Government,
Development Department.

To—The Director of Agriculture in Mysore.
The Comptroller to Government.

Exd.—C. K.

WD 1417—GPB—895—15-2-38.

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ADMINISTRATION REPORT OF THE MYSORE SERUM INSTITUTE FOR THE YEAR 1936-37

WITH THE GOVERNMENT REVIEW THEREON.

Government of his highness the Maharaja of Mysore.

GENERAL AND REVENUE DEPARTMENTS.

G. O. No. D. 5786-87—C. V. 24-37-3, dated 3rd—8th February 1938.

Administration Report.

Reviews the —— of the Mysore Serum Institute for the year 1936-37.

READ—

Letter No. R. O. C. 287—Hc. 105—37-38, dated the 1st November 1937, from the Director of Agriculture, submitting the Administration Report of the Mysore Serum Institute for the year 1936-37 with his review thereon.

ORDER No. D. 5786-87—C. V. 24-37-3, DATED BANGALORE, THE 3RD—8TH FEBRUARY 1938.

Recorded.

2. The Mysore Serum Institute continued to manufacture sera and vaccines on a large scale for controlling important contagious diseases of live-stock and poultry in the State. It is gratifying to note that the demand for the products of the Institute from several places outside the State considerably increased during the year, the total quantity supplied being 3,59,000 unit doses against 3,16,000 unit doses during the previous year. Indents were, for the first time, received from important Indian States. There was an increase in the local demand for rinderpest serum and rinderpest virus due to a greater incidence of rinderpest in the State during the year. Among the new preparations of the Institute may be mentioned vaccines etc., against rabies in dogs and other animals, anthrax in sheep and cattle, strangles in horses and chicken-pox in poultry. A detailed scheme on prophylactic methods against diseases affecting poultry in the State extending over a period of five years was sent to the Imperial Council of Agricultural Research for consideration.

3. The revenue realised and the expenditure incurred by the Institute during the year were Rs. 1,00,600 and Rs. 67,600 against Rs. 74,900 and Rs. 75,000 respectively, during the previous year, resulting in a profit of Rs. 33,000 which was due to the general increase in supplies made.

4. The work of the Institute continued to be satisfactory.

M. VENKATANARANAPPA,
Secretary to Government,
Development Department.

To—The Director of Agriculture in Mysore.
The Comptroller to Government.

Exd.—C. K.

WD 1417—GPB—395—15-2-38.

No. R. O. C. 287—
H. C. 105—37-38.

OFFICE OF THE DIRECTOR OF AGRICULTURE IN MYSORE.

Bangalore, dated 1st November 1937.

FROM

T. G. RAMA IYER, ESQ., B.A.,
Director of Agriculture in Mysore,
Bangalore.

TO

M. VENKATANARANAPPA, ESQ., B.A.,
Secretary to the Government of His Highness
the Maharaja of Mysore, Development Department,
Bangalore.

SIR,

I have the honour to submit herewith, in triplicate, the report on the working of the Mysore Serum Institute for the year 1936-37.

The Serum Institute continued to prepare large quantities of Sera and Vaccines for controlling the contagious diseases of live-stock and poultry. The products of the Institute continued to be popular in several other parts of India. Three lakhs and fifty-nine thousand doses were issued to places outside the State as against 3,56,000 doses issued to the Mysore Veterinary Department. It is gratifying to note that the Governments of Hyderabad, Baroda, Coorg, Cochin, Pudukkottai, Indore, Bhopal, Bhavanagar, Jodhpur, Travancore and Kolhapur sent their indents for supplies of Sera and vaccines to this Institute. Owing to greater incidence of Rinderpest, large quantities of Rinderpest serum were issued to the Mysore Civil Veterinary Department.

Dr. P. M. Narayanaswami Naidu, Veterinary Research Officer, was engaged in the investigation of Prophylactic methods against poultry disease in the State. Vaccines against Rabies in dogs, Anthrax in sheep and cattle, Strangles in horses and Chicken-pox in poultry were also prepared by Dr. Naidu on an experimental scale and are proposed to be issued shortly. Mr. Ranganatha Rao, Assistant Superintendent, Civil Veterinary Department, continued his investigation of Johne's disease among cattle, subsidised by the Imperial Council of Agricultural Research.

The Institute has worked very efficiently during the year. The quantities of sera and vaccines sold during the year are as detailed below :—

Anti-rinderpest serum	2,37,600	doses.
Rinderpest Goat virus	42,795	,,
Anti-hæmorrhagic Septicæmia	1,05,120	,,
Anti-blackquarter serum	28,720	,,
Anti-Anthrax (Bovine serum)	31,040	,,
Anti-hæmorrhagic Septicæmia vaccine ...	89,800	,,
Blackquarter Bacterin	1,38,100	,,
Blackquarter filtrate	16,000	,,
Sheep-pox vaccine	87,500	,,

The total revenue realised from the working of the Institute during the year was Rs. 1,00,600 against an expenditure of Rs. 67,600 as against a revenue of Rs. 74,900 and an expenditure of Rs. 75,000 in the previous year.

I have the honour to be,
Sir,
Your most obedient servant,
T. G. RAMA IYER,
Director of Agriculture.

ANNUAL REPORT OF THE MYSORE SERUM INSTITUTE, HEBBAL, BANGALORE, FOR THE YEAR 1936-37.

INTRODUCTION.

The main work of the Mysore Serum Institute during the year 1936-37, consisted of, as in previous years, the preparation of large quantities of several Sera and Vaccines for controlling important contagious diseases of live-stock and poultry. The production of these biological products was so regulated as to always maintain sufficient stocks on hand; and all the indents received both from within and from outside the State, were complied with fully and promptly.

Although the Institute was primarily started to ensure adequate preparation and supply of Biologicals for the control of epizootics in the State, it is gratifying to report that the products of this Institute have become increasingly popular also in several other parts of India. The total number of unit doses issued to places outside the State alone during this year was about 3,59,000 whereas to the Mysore Civil Veterinary Department it was nearly 3,56,000 unit doses as against 3,16,000 and 2,52,000 unit doses, respectively, in the preceding year. The All-India Tour undertaken by me in 1936 on deputation had an educative value, and gave greater publicity for the work of the Institute. Many of the Indian States evinced greater interest in the live-stock problems and disease control, and placed orders for supplies with this Institute. Indents are being received for the first time from a number of new places also as detailed in the *margin in addition to the usual indents from the Governments of Hyderabad, Baroda, Coorg, Cochin, Pudukkottai, etc., who have been our regular, long-standing customers.

* Indore, Bhopal, Bhavanagar, Jodhpur, Trivandrum, Kolhapur, Sangli, Ujjain, Belgaum, Savanur, Pondicherry, Kathiawar, etc.

The total supplies of the various Biologicals to the Mysore Civil Veterinary Department during the year under report showed an increase over those in the previous year as already stated above, excepting in cases of Anti-Hæmorrhagic Septicæmia Serum, Hæmorrhagic Septicæmia Vaccine, Anti-Blackquarter Serum, and Fowl Cholera Vaccine, for which the demands were comparatively less.

But the demand for Rinderpest Serum and Rinderpest Virus from the Mysore Civil Veterinary Department was far more (*viz.*, over four times more) than that in the previous year, evidently due to a greater incidence of Rinderpest in our State during the year under report as compared with that in the preceding year when there were practically no outbreaks of this disease at all. In the case of Hæmorrhagic Septicæmia Serum and Hæmorrhagic Septicæmia Vaccine, the supplies were only about half of what they were in the previous year, as there was an appreciable decline in the incidence of Hæmorrhagic Septicæmia. Whereas the demand for Blackquarter Bacterin was considerably more (*viz.*, by about 60 per cent) while the same for Blackquarter Serum was less than that in the previous year (*viz.*, by about 46 per cent) as a result of timely preventive inoculations with bacterin alone in preference to serum inoculations at the scenes of actual outbreaks. Besides, the quantity of sheep-pox vaccine supplied during the year was also almost double that in the preceding year.

Again, it may be observed that the demands from places outside the State for all the products were very much more than those in the previous year excepting for Anti-Rinderpest Serum and Rinderpest Bull Virus, *viz.*, by about eight times more in respect of Anti-Anthrax Serum and Blackquarter Bacterin, five times more in the case of Rinderpest Goat Virus, and twice as much in the case of Hæmorrhagic Septicæmia Serum, Blackquarter Serum, and Blackquarter Filtrate.

Since the commencement of this Institute in 1927-28, a total of about 12½ million unit doses of various biologicals has been issued from this Institute, up-to-date, the quantities supplied to places outside the State alone being over two million

unit doses, bringing in a revenue of nearly Rs. 2,84,000 to our State within the last six years.

A noteworthy feature in the working of the Institute during the year under report is that the Institute has been able to realise a total revenue of Rs. 1,00,600 against an expenditure of only Rs. 67,600 realising thereby a profit of about Rs. 33,000. In the preceding year, the total revenue amounted to only Rs. 74,900.

Since Government in their Order No. D. 4835-6—C. V. 59-33-2, dated 9th April 1934 sanctioned the substitution of goat-virus-alone method in preference to the cumbersome and costly serum-simultaneous method against Rinderpest, the results of protection undertaken by the department in the several outbreaks have been very encouraging. Experiments undertaken by the Institute to study the comparative value of these methods both at the Institute and on a herd of Amrit Mahal cattle for the past three years, have fully borne out the superiority and efficacy of goat-virus-alone method as a practical and more economical measure for Rinderpest.

An important feature during the year is that with a view to encourage Poultry Industry, Government have been pleased to sanction provisionally for one year, (*vide* Government Order No. D. 8583-85—C. V. 88-36-2, dated 5—10th June 1937) a scheme of research prepared by Dr. P. M. Narayanaswamy Naidu, Veterinary Research Officer, on prophylactic methods against diseases affecting poultry in our State, and much valuable data is already being collected by him in this connection. The Government have also forwarded to the Imperial Council of Agricultural Research, a more detailed scheme on the subject, extending over a period of five years for consideration of their Advisory Board at their ensuing meeting at Delhi during October 1937.

Another noteworthy feature is that certain interesting and important investigations have been carried on in the Research Section of the Institute on some of the obscure diseases of live-stock and poultry and four new products, *viz.*, vaccines against rabies in dogs and other animals, (2) anthrax in sheep and cattle, (3) strangles in horses and (4) chicken-pox in poultry, were also prepared on an experimental scale as detailed in the annexed report. These new vaccines have stood all laboratory tests successfully and they are proposed to be issued shortly for wider trial in the field.

The Research Section of the Institute having been provided with special laboratory facilities, separate accommodation, etc., for conducting scientific investigations and advanced research work, Dr. P. M. Narayanaswamy Naidu, Veterinary Research Officer, has also been carrying on a serological study on Sandal Spike disease on behalf of the Mysore Forest Department.

Besides, the Assistant Superintendent in charge of the Scientific Section of the Civil Veterinary Department has also been provided, as in previous years, with all laboratory facilities in this Institute for investigation of Johne's disease among cattle in our State subsidised by the Imperial Agricultural Research Council, and also for carrying on the routine laboratory work of the Civil Veterinary Department. Urine harmone for the treatment of sterility among cows and slow covering bulls, prepared in this section and supplied to Village Panchayats and Travancore State has been favourably reported upon.

Certain experiments were conducted and some progress was made during the year under report, as noted below in improving the technique of the preparation of some of the products already under issue so as to increase their efficacy.

Rinderpest Virus (Bovine).—The strain of virus maintained in the Institute had to be passaged through sheep once during the year, for purposes of exaltation when it began to decline in its virulence.

Rinderpest Virus (Goat Adapted).—The mixed strain of Muktesar and of this Institute was successfully maintained in goats without any variation in its behaviour, virulence or antigenic value.

Blackquarter.—As Blackquarter is generally considered to be caused by mixed strains of the clostridium group of organisms, some of the typical strains were isolated to be incorporated in the preparation of biologicals against Blackquarter, and highly virulent cultures only were exclusively used for preparing Bacterin with very satisfactory results.

Fowl Cholera.—Comparative tests for potency of vaccines prepared from heat-killed and corbolised cultures (Marco's and Hosny Mohamed's method) were made and as the latter was found to be superior, this method was adopted for the routine preparation of Fowl Cholera Vaccine.

Hæmorrhagic Septicæmia.—As the causal organisms of Fowl Cholera and Hæmorrhagic Septicæmia are members of the same group—Pasteurellæ, similar experiments as in the case of Fowl Cholera Vaccine were conducted with regard to Hæmorrhagic Septicæmia Vaccine also and they again proved the superiority of the carbolised vaccine over the heat-killed one. The chemically killed Vaccine is therefore now in vogue.

Sheep-pox Vaccine.—A strain of sheep-pox received from Siddlaghatta was found to be highly virulent and as such it was used in the preparation of sheep-pox vaccine during the year.

During the year under report, samples of all the different sera and vaccines prepared in the Institute and also certain parasites found in domestic animals, together with some interesting and instructive photographs, charts, slides, etc., were exhibited not only in the Dasara Exhibition at Mysore, as in previous years, but also in the All-India Industrial Exhibition, held at Lucknow from December 1936 to February 1937. Besides, the Biological products of this Institute were arranged to be exhibited in the Ghati Subramanya Jatra in January 1937 and also in the Nagour Cattle Fair (Jodhpur State) during February and March 1937.

I attended, on deputation, the meeting of the Animal Husbandry Wing of the Imperial Council of Agricultural Research, held at Madras in December 1936, and also the Animal Health Sub-Committee thereof. I also delivered two lectures on "Diseases of Animals" and "Co-operative Dairying and Insurance" to the Co-operative Training Classes held in February 1937. In June 1937, a lecture was delivered by me on "Some aspects of disease control in animals" at the Indian Institute of Science under the auspices of the "Society of Biological Chemists, India".

II. ADMINISTRATION.

I held charge of the Institute throughout the year under report excepting for a short period from 1st July 1936 to end of the month when I had been kindly deputed by Government to visit some of the important States and biological Institutes in North India.

Mr. P. U. Nayar continued to be the Bacteriological Assistant throughout the year and also acted as Superintendent of the Institute during my absence on deputation.

Dr. P. M. Narayanaswamy Naidu was in charge of the Research Section of the Institute during whole of this year and his designation was changed from "Assistant Superintendent" to that of "Veterinary Research Officer" (*vide* G. O. No. D. 5433-34—C. V. 40-36-2, dated 10—13th February 1937).

III. STAFF.

The non-gazetted staff of this Institute consisted of the following:—

(1) VETERINARY SECTION	...	Five Veterinary Inspectors and ten Salustries.
(2) RESEARCH SECTION	...	One Veterinary Inspector and one Salustry.
(3) OFFICE SECTION	...	One Head Clerk, one Head Accountant, five Clerks, five Peons and two Watchmen
(4) LABORATORY SECTION	...	One Mechanic and four Laboratory Attendants.
(5) PACKING SECTION	...	One Carpenter and one Packer.
(6) LABOUR SECTION	...	One Maistry, 63 Cattlemen and six Thoties.

IV. BUILDINGS.

The present cattle sheds, being only thatched ones, have been found to be very unsatisfactory inasmuch as the roofings are frequently damaged due to heavy winds and rains, causing thereby much inconvenience and also necessitating considerable recurring expenditure towards repairs. Hence it has been found very

necessary and also desirable to construct the sheds on a perma nent basis. Although this is an important pressing item of work, it has not been possible to be carried out so far, for want of sufficient funds for the purpose. However, it is hoped that it will be taken on hand early.

As regards residential quarters to the Superintendent and the staff of this Institute, Government have been pleased to sanction the construction of a building for the Superintendent in the first instance and the work will be taken on hand early next year. It is believed that the question of residential quarters to the other staff will also be considered favourably in due course.

V. CULTIVATION.

The raising of fodder crops on the Institute grounds which had been undertaken by utilising the services of the cattlemen of the Institute alone, during their spare time, was found to be quite successful inasmuch as it not only reduced the expenditure under "Feeding Charges" but also afforded fresh green fodder for the animals of the Institute; and as such some more bits of land belonging to the Institute were also brought under cultivation during this year and 115 tons of green jola; 16,076 lbs. of lucerne; 1,150 lbs. of ragi straw, and 532 seers of ragi of the aggregate value of about Rs. 1,600 were grown and the same used for feeding the animals.

VI. ANIMALS

As usual he buffaloes, buffalo-bull calves, goats, etc., required for production of sera and vaccines as well as for tests and experiments were purchased from contractors on "Tender System," and the the 'done' animals were sold to tender contractors alone as and when available. However, the small animals like guinea pigs and rabbits, required for experiments and tests, were obtained, as in previous years, by breeding the same in the Institute, and supplemented by occasional purchases.

The details of animals used during the year under report for production of biological products and for different tests and experiments are as follows:—

1. One hundred and seventeen fresh he-buffaloes for preparing Anti-Rinderpest Serum.

2. Two discontinued Rinderpest serum makers for preparing Anti-Fowl Cholera Serum.

3. Seventy-seven discontinued Rinderpest serum makers for the production of Anti-Hæmorrhagic Septicæmia Serum.

4. Thirty-one discontinued Rinderpest Serum makers for preparing Anti-Anthrax Serum, 16 of which were discontinued Hæmorrhagic Septicæmia Serum producers as well.

5. One hundred and eighty-one fresh buffalo-bull calves for preparing Rinderpest Virus as well as for conducting tests.

6. Four bull calves for Rinderpest Virus experiments.

7. Four hundred and eighty-five goats for preparing 'Goat Virus' and for conducting experiments.

8. Ninety-five sheep for preparing 'Sheep-pox Vaccine' and for experiments.

9. One hundred and eighty-three birds and 143 laboratory animals for different tests and experiments.

PRODUCTION AND SUPPLY OF SERA AND VACCINES.

Anti-Rinderpest Serum.—Although the original object with which the Institute was started was to prepare Rinderpest bull virus and Rinderpest serum required for use of the Civil Veterinary Department of this State only, for conducting Serum-Simultaneous inoculations; yet as a result of the general decline in the incidence of the disease consequent on the extensive campaign of protective inoculations undertaken by the Mysore Civil Veterinary Department, year after year, and also due to

the introduction of 'goat-virus-alone' inoculations all over the State for controlling even the few stray outbreaks of the disease, there has been a noticeable fall in the demands for Rinderpest bull virus as well as Rinderpest serum from the Mysore Civil Veterinary Department. In fact, the supplies made in the recent years for use in our State are almost negligible as compared with those a few years past, inasmuch as only 6,500 doses of Rinderpest serum and 75 doses of bull virus were supplied in the year 1935-36 as against 2,45,000 doses and 2,52,000 doses supplied respectively in 1932-33, before the introduction of goat adapted virus. However, the demand for Rinderpest serum from outside the State continues to be nearly as great as before, the total supplies during a year being about 2,00,000 doses on an average. Thus it is seen that Rinderpest serum is required to be prepared in this Institute mainly to meet the outside demands.

As there was a stock of only 54,350 doses of serum available in the commencement of the year under report, 117 fresh he-buffaloes were used and 1,83,250 doses (5 c.c. being the unit dose) were prepared during the year as against 1,69,700 doses in the previous year. Thus out of the total quantity, of 2,37,600 doses available for issue this year, 1,43,200 doses were supplied to places outside the State and 30,200 doses to the Mysore Civil Veterinary Department as against 1,90,000 doses and 6,500 doses respectively in the previous year. One lakh and twenty-five thousand doses were issued to Hyderabad, 2,100 doses to Baroda, 1,500 doses to Coorg and 250 doses to Ramdrug as against 1,65,000 doses 12,000 doses, 5,000 doses and 3,300 doses, respectively, in the preceding year.

During the year indents were received for the first time for 5,000 doses from Kolhapur, for 6,000 doses from Indore, for 1,000 doses each from Bhopal, Bhavanagar and Jodhpur, for 250 doses from Savanur and for 100 doses from Ujjain.

Rinderpest Bull Virus.—Virus being a very fragile product which keeps potent only for about a week, it is not always practicable to get supplies from this Institute for use in distant places outside the State and as such there has not been much outside demand for this Virus. Hence, this product is required to be prepared in this Institute mainly for use of the Mysore Civil Veterinary Department. In recent years on account of the general decline in the incidence of Rinderpest in our State and also due to the introduction of Goat-Virus-Alone inoculations in preference to Sero-Virus-Simultaneous method, as already stated above, there has been very little demand for Bull Virus even from within the State. But all the same, even though there is not much demand for this virus for field use, yet some calves are required to be inoculated periodically for maintaining the strain of Virus and for purposes of tests, immunisation of Rinderpest Serum Producers, etc., and incidentally some quantity of virus is also drawn from each calf. Thus only 72 buffalo bull calves were used and 8,825 doses of virus (1 c.c. being the unit dose) were drawn this year as against 148 calves used and 10,575 doses produced in the preceding year. Out of the 72 calves used, 10 calves were rejected as non-reactors (*i.e.*, as not showing typical symptoms of the disease in time). While in the previous year 49 calves had been rejected as non-reactors.

From the Mysore Civil Veterinary Department there was a demand for 725 doses of this Virus during the year whereas in the previous year the demand was only for 75 doses. From Bhavangar an indent for 25 doses of virus was received for the first time during the year under report. Nine hundred and fifty doses were used in the Institute for experimental purposes as against only 75 doses used in the preceding year.

Rinderpest Goat Adapted (Blood) Virus.—As the efficacy of goat adapted virus as a single vaccine for effective control of Rinderpest has been well established, this product is becoming increasingly popular, and it is in very great demand both from within and from outside the State. As a result, the production of this virus had also to be considerably increased this year (*viz.*, by more than four times that of last year), to cope with the increased demands. Consequently, 482 goats were employed and 63,015 doses of virus (1 c.c. being the unit dose) were drawn whereas in the previous year only 330 goats were used and 14,835 doses were produced.

During the year under report 36,390 doses of goat virus were supplied to the Mysore Civil Veterinary Department and 6,405 doses to places outside the State as against 1,470 doses and 1,185 doses supplied, respectively, in the preceding year. Indents were also received for the first time for 2,040 doses from Kolhapur, for 1,230

doses from Savanur, for 945 doses from Sangli, for 840 doses from Indore, for 510 doses from Bhavanagar and for 210 doses from Morvi State (Kathiawar).

Anti-Hæmorrhagic Septicæmia Serum.—As there were only 50,600 doses of Hæmorrhagic Septicæmia Serum on hand at the commencement of the year, 77 discontinued rinderpest serum makers were used and 54,840 doses) 15 c.c. being the unit dose) were prepared this year as against 25 serum makers used and 23,900 doses of serum prepared in the previous year, and thus a total quantity of 1,05,440 doses of serum was available for issue this year. The demand for the serum during the year from places outside the State was almost double that in the previous year inasmuch as 94,400 doses were supplied this year as against only 57,100 doses supplied last year. As regards the demand from the Mysore Civil Veterinary Department, it was only about half of what it was in the preceding year and as such only 10,620 doses were supplied this year as against 18,720 doses in the previous year. This fall in the indents from the Mysore Civil Veterinary Department was due to the appreciable decline in the number of outbreaks of Hæmorrhagic Septicæmia in the State.

As regards the supplies made to places outside the State, 91,000 doses were supplied to Hyderabad (which is almost double that in the previous year), 1,000 doses to Baroda, 440 doses to Trichur and 200 doses to Pudukkottai. A noteworthy feature is that this was indented for for the first time during the year from Indore, Sangli, Belgaum and Trivandrum.

Anti-Blackquarter Serum.—No Blackquarter Serum was required to be produced during the year under report, as there was a stock of 49,960 doses (15 c.c. being the unit dose) as opening balance at the beginning of the year. While the demand for this product from the Mysore Civil Veterinary Department was a little less, the supplies made to places outside the State during the year were nearly twice those in the previous year. Thus 25,100 doses were issued to outside places and 3,620 doses to the Mysore Civil Veterinary Department as against only 13,040 doses and 5,280 doses, respectively, during the last year. Indents were also received this year for the first time from Sangli and Belgaum.

Anti-Anthrax Serum (Bovine).—Thirty-one he-buffaloes (15 discontinued rinderpest serum makers and 16 discontinued Hæmorrhagic Septicæmia makers) were used and 29,580 doses of Anthrax Serum were produced during this year whereas in the previous year only 25 he-buffaloes were used and 26,360 doses were prepared. Out of the total quantity of 54,200 doses of the serum available for issue this year including the opening balance of 24,620 doses, the Mysore Civil Veterinary Department was supplied with 23,180 doses; whereas the places outside the State were supplied with 7,860 doses as against 23,660 doses and only 1,020 doses supplied, respectively, in the previous year. The demand for this product from Hyderabad was 7½ times that in the previous year, while two more States (*viz.*, Kolhapur and Trivandrum) also indented for this serum for the first time during the year.

Anti-Fowl Cholera Serum.—Two discontinued rinderpest serum makers were used and 17,400 doses (2 c.c. being the unit dose) of Anti-Fowl Cholera Serum were prepared during the year as against 2,050 doses prepared last year. As there was already a stock of 6,050 doses on hand at the beginning of the year, the total quantity of the serum available for issue during the year was 23,450 doses.

As this product was proposed to be tested in the field on an extensive scale, it was supplied free of cost as in previous years, both to the Mysore Civil Veterinary Department and to places outside the State for wider trial in the field. Thus, the Mysore Civil Veterinary Department was supplied with 975 doses, and the places outside the State were supplied with 1,100 doses during the year, whereas in the previous year only 800 doses and 125 doses had been supplied respectively. This serum was indented for for the first time by Hyderabad, Savanur, Palamakottah and Allahabad during the year under report, while Coorg, Cochin and Colombo indented for 525 doses, 75 doses and 100 doses, respectively, as against 50 doses, 50 doses and 25 doses in the previous year.

Proposals will be submitted shortly for charging for this serum as it has been tried in the field quite extensively both within and outside the State and is reported to have given very satisfactory results wherever it has been employed in accordance with the instructions, and as it has also stood the rigid tests in the Institute.

Hæmorrhagic Septicæmia Vaccine.—One lakh, eleven thousand and four hundred doses of Hæmorrhagic Septicæmia vaccine (5 c.c. being the unit dose) were prepared and added on to the stock of 7,450 doses remaining on hand at the commencement of the year as against 1,03,100 doses prepared in the previous year. However, on account of the general decline in the incidence of Hæmorrhagic Septicæmia in our State, the demand for this serum from the Mysore Civil Veterinary Department was only about half of that in the previous year while there was an appreciable increase in the supplies made to places outside the State. Thus the Mysore Civil Veterinary Department indented for only 32,400 doses of this product while the places outside the State were supplied with 57,400 doses during the year, as against 62,950 doses and 45,100 doses supplied respectively in the previous year. There was a demand for 400 doses of this vaccine from Indore for the first time during the year.

Blackquarter Bacterin.—As the demand for Blackquarter Bacterin from within as well as from outside the State had further increased considerably this year, the production of it had also to be correspondingly increased, so much so that its output was doubled. As against only 73,900 doses prepared last year (5 c.c. being the unit dose) 1,48,250 doses were prepared this year and added on to the last year's balance of 18,050 doses, thus raising the total to 1,66,300 doses. Out of this, 1,33,500 doses were supplied to the Mysore Civil Veterinary Department and 4,600 doses to places outside the State as against only 83,600 doses and 600 doses, respectively, in the previous year.

Although this is a new product introduced into the field only in the latter part of 1933-34, it has become exceedingly popular as evidenced by the fact that there was a demand for 1,38,100 doses of the same during the year under report. While the demand for this product from Pudukkottai had increased from 600 doses in the last year to 2,400 doses this year, indents were also received for the first time during this year, from Hyderabad and Pondicherry for 2,000 doses and 200 doses, respectively.

Blackquarter Filtrate.—As a result of the introduction of Blackquarter Bacterin in preference to Blackquarter Filtrate, in view of the former being found to be definitely more efficacious than the latter, the bacterin alone was used in our State, completely dispensing with filtrate, and as such there was no demand at all for the filtrate from the Mysore Civil Veterinary Department; and consequently this was not required to be prepared in large quantities. Besides, as there was already on hand a stock of 9,850 doses of filtrate at the beginning of the year, only 7,500 doses were prepared this year so as to meet the demands of only Hyderabad where the bacterin had not yet been tried extensively. But now as they have also begun using bacterin, it is believed that they too will continue to use the same hereafter, in preference to the filtrate, when there would be perhaps no demand at all practically for the latter from anywhere.

However, as against 7,000 doses of filtrate indented for by Hyderabad during last year, 14,000 doses were indented for this year, in addition to 2,000 doses of bacterin for the first time.

Sheep-pox Vaccine.—This is another product for which there was a further increased demand this year both from within and outside the State, the demand from the former being almost double, while from the latter it was 9 times that in the previous year.

Consequently 70 sheep were used and 92,014 doses (1 c.c. being equal to 100 doses) of the vaccine were prepared this year as against only 48,673 doses prepared last year, and in all there were 94,514 doses of this vaccine available for issue during the year under report, including the stock of 2,500 doses that remained at the commencement of the year. Eighty-three thousand nine hundred doses were supplied to the Mysore Civil Veterinary Department and 3,600 doses to places outside the State as against only 49,350 doses and 400 doses, respectively, in the previous year. Pudukkottai was supplied with 1,200 doses of the vaccine this year whereas in the preceding year only 400 doses had been supplied. Besides, indents were received for this product for the first time during the year under report from Bhopal, Agra (U.P.), Morvi State (Kathaiwar).

Fowl Cholera Vaccine.—As in the case of Fowl Cholera serum, this vaccine was also a new product prepared in the Institute, which was being supplied free of cost to places within as well outside the State for trial in the field. The efficacy of this product having now been well established, as could be seen from the good results reported upon from the field, proposals will be submitted to charge for this product also.

As there was sufficient stock on hand, *viz.*, 5,800 doses (1 c.c. being the unit dose) at the beginning of the year, no more vaccine was required to be prepared during the year. Out of this stock, 450 doses and 1,050 doses were supplied to places within and outside the State respectively, as against 1,700 doses and 600 doses supplied in the preceding year. For this product also indents were received for the first time during the year under report from Hyderabad, Coorg, Trichûr, Colombo, Savanur, Pallamacottah and Allahabad.

Revenue and Expenditure.—The total income derived by the sale of biologicals to the Mysore Civil Veterinary Department and to places outside the State and also by the sale of 'Done' animals, etc., during the year under report, amounted to Rs. 1,00,600 as against only Rs. 74,900 in the previous year, the revenue from the Mysore Civil Veterinary Department and from places outside the State being Rs. 54,300 and Rs. 45,000, respectively, during the year as against only Rs. 39,200 and Rs. 35,700, respectively, in the preceding year.

In this connection it is gratifying to note that it was possible to realise during this year, a revenue of Rs. 1,00,600 against an expenditure of only Rs. 67,600 realising thereby a profit of Rs. 33,000, whereas in the previous year the total revenue amounted to only Rs. 74,900 against an expenditure of Rs. 75,000.

While the increase in revenue this year is accounted for by the general increase in supplies made to both within and outside the State, the decrease in expenditure is mainly due to minimising the purchases under "Apparatus, Chemicals and Glassware" and also by effecting economies in every possible way.

Thus it is seen that the working of the Institute during the year under report was very satisfactory from a financial point of view also, inasmuch as that there was a considerable increase in revenue while there was an appreciable reduction in expenditure as compared with last year.

Experiments and Research:

Routine Bacteriology and Pathology.—The nature of work under this head continued to be almost the same as in previous years, and thus the main portion of routine Bacteriological work consisted of the following :—

1. Examination of various smears,
2. Sterility tests of bovine and goat adapted Rinderpest Virus, Sera and Vaccines,
3. Determination and Exaltation of virulence of strains of Blackquarter, Hæmorrhagic Septicæmia, Fowl Cholera, etc.,
4. Preparation of various antigens for immunisation and tests,
5. Maintenance of stock cultures, etc.

During the year under report 601 samples of Rinderpest Virus, both bovine and goat adapted, 224 samples of sera and vaccines, 114 samples of materials of a miscellaneous nature were subjected to cultural tests—both aerobic and anaerobic. PH estimation of nine samples of sera and 147 samples of culture media was also conducted in addition to the above.

Details of Smears Examined.

Tetanus ...	... 6
Anthrax ...	... 19
Blackquarter ...	... 61
Hæmorrhagic Septicæmia	... 414
Pasteurellae ...	... 282
Theilaria mutans ...	... 526
Rinderpest virus smears	... 517
Post-mortem smears of Baci Nearogen group	... 294
Total	... 2,119

The next test for the study of the further duration of immunity on the remaining batch of the herd is proposed to be taken up shortly.

Goat Tissue Vaccine experiments undertaken during the previous year will be continued during the coming year and field tests in areas where Rinderpest occurs periodically will be undertaken to study the comparative value of goat blood virus and spleen virus.

Fowl Cholera.—Both local and foreign, virulent strains of pasteurellae avisepticus were maintained by sub-cultures and passages through pigeons and fowls. Thirty-one fowls and 28 pigeons were used for the purpose of exaltation and finding out the m.l.d. Experiments undertaken to study the minimum lethal dose of the passaged cultures have revealed a wide range of variation and even as small a dose as of 1—30,000 c.c. was found lethal to pigeons.

A small quantity of fowl cholera Vaccine was prepared after the method of Morcos and Mahamoud, *i.e.*, by killing cultures by the addition of chemicals such as phenol, formaline, etc., and was tested side by side with heat-killed vaccine, and the former was found to be far superior in antigenic value. Hence this method has been adopted for the routine preparation of Fowl Cholera Vaccine.

Anti-Fowl Cholera Serum prepared from buffaloes and tested on pigeons, was found to be quite satisfactory.

Hæmorrhagic Septicæmia:—Several strains, both local and foreign, of Hæmorrhagic Septicæmia virulent culture were maintained by sub-cultures and animal passages. As the m.l.d used to vary frequently, 24 calves were used during the year for fixing the m.l.d which was found to vary from 0·01 to 0·5 c.c. An attenuated avirulent strain of Hæmorrhagic Septicæmia culture was also maintained for immunising Serum makers and calves were tested with doses upto 10 cc. with no untoward result. The immunity of serum makers immunised with the above avirulent cultures was tested with virulent culture in doses upto 5 c.c. and they were found to have a solid immunity.

As the causal organism of fowl cholera and Hæmorrhagic Septicæmia are members of the same group, *i.e.*, Pasteurellae, similar experiments as in the case of fowl cholera vaccine were conducted with regard to Hæmorrhagic Septicæmia Vaccine also and they again proved the superiority of chemically killed cultures over the heat killed ones. Therefore the former method is in vogue now for the routine preparation of Hæmorrhagic Septicæmia Vaccine also.

Six brews of Hæmorrhagic Septicæmia Vaccine were prepared during the year, three heat-killed and three carbolised, and on tests, the carbolised brews of vaccine were found much more efficacious in antigenic value. Thirty-four buffalo-bull-calves were used as test animals and 12 as controls for this experiment.

Blackquarter:—Strips of affected muscles kindly sent by Veterinary Inspectors were subjected to cultural and animal tests. The virulent and typical samples were added to our collection and the new strains were incorporated in the preparation of our polyvalent Blackquarter Bacterin.

It is gratifying to note the excellent results of the use of the Bacterin in the field on an extensive scale. Good results were also reported by its use in an outbreak of Blackquarter in the Hebbal Farm and in the neighbouring village by the Veterinary Inspector in charge of the Farm Hospital, where the disease was successfully controlled by immediate inoculation with serum followed by a dose of Blackquarter Bacterin after four days. Intravenous injection of Blackquarter serum as a curative measure in the early stages of the disease was also observed to be very effective.

As the m.l.d of Balckquarter cultures used to vary, experiments to find out the exact m.l.d had to be conducted on different occasions for the potency tests of Blackquarter Biologicals. The m.l.d. varied from 0·003 to 0·125 c.c. and from 0·75 to 1.5 c.c. in guinea pigs and bovines, respectively.

Blackquarter Bacterin:—Eight brews of bacterin amounting to 1,48,000 doses were produced during the year and were tested on bovines and guineapigs for safety and potency with very good results. Bacterin has almost completely replaced the previous Blackquarter Filtrate and all indents both from the State and places outside are mostly for the former product. Even Hyderabad has of late been indenting for Blackquarter Bacterin.

Pathology.—This comprised mainly of systematic *post-mortem* examinations of all animals and birds that died after experiments, tests or otherwise in the Institute. Some specimens of pathological interest and a few helminths were collected and added to the museum of the Institute in the course of the work.

Details of Post-Mortem Examinations.

Kind of animals	No. examined		Total
	Institute	Research Section	
Buffaloes	8	...	8
Buffalo bull calves	90	3	93
Bull calves	1	1	2
Goats	92	34	126
Sheep	10	26	36
Bullock	1	2	3
Cow	...	3	3
Horse	1	...	1
Small animals	108	149	257
Poultry	96	104	200
Total ...	407	322	729

The Etiological diagnosis arrived at on *post-mortem* examinations of the above number of 729 animals and birds was as follows :—Fifty-two under Rinderpest, 49 under Hæmorrhagic Septicæmia, 47 under Blackquarter, 70 under Anthrax, 44 under Fowl Cholera, 39 under Rabies and 428 under miscellaneous.

Rinderpest.

Bovine Virus.—The strain of bovine virus was successfully maintained through buffalo-bull calves throughout the year, except once when a slight decline in the virulence of the strain was noticed and it had to be passaged through sheep for exaltation. Altogether the number of passages the virus underwent during the year was 43 and 72 buffalo-bull calves were used for the purpose with 86 per cent satisfactory reactors and a mortality of 30 per cent.

Goat Adapted Virus.—As was reported last year, the two strains of fixed Goat Virus—Muktesar and Mysore—were pooled together and the mixed strain has since undergone 101 passages through goats and has maintained uniform and characteristic virulence to the Bovines. This has been confirmed periodically by alternate test passages through buffalo—bull calves undertaken during the year. Four hundred and eighty-two he-goats were used for Virus production and maintenance of the strain during the year as against 330 goats last year. The percentage of satisfactory reactors was 89 with a mortality of about 28 per cent. It may be of interest to mention in this connection that the superiority of the Goat-Virus-Alone method to the Serum-Simultaneous method of combating Rinderpest has been definitely established by the experiments conducted in the Institute here as well as on some herds of Amrit Mahal Cattle, as also by the extensive field inoculations that are being conducted by the Mysore Civil Veterinary Department for over three years. As a result, Goat Blood Virus alone is being used with great advantage in almost all outbreaks of rinderpest in the State, practically eliminating the use of the costlier Rinderpest Serum.

As mentioned in last year's report, 213 animals belonging to Amrit Mahal Herd No. 3 were protected with Goat Rinderpest Virus as long ago as February 1933. Subsequently, batches of about 25 from the above were being tested with virulent bovine virus periodically for study of the duration of immunity. The test conducted so far has shown that the period of immunity by Goat Virus extends up to 33½ months.

Sheep-pox.—About the middle of the year 1936-37 it was observed that the strain of the sheep-pox virus maintained in the Institute for the preparation of sheep-pox vaccine showed signs of loss of virulence and consequently it was arranged to obtain pox material from natural cases of sheep-pox from different localities of the State. Materials were received from Tiptur, Hoskote, Challakere and Siddlaghatta and on testing them separately on 12 sheep in four batches of three sheep each, it was observed that the materials received from the first three villages failed to reach, while the one from Sidlaghatta was found highly virulent. This strain was used for the preparation of sheep-pox vaccine during the rest of the year. The strain is so far successfully maintained and periodical tests for gauging the virulence are being undertaken.

Anti-Rabic Vaccine.—Having studied the methods of the preparation of Anti-Rabic vaccine in the Pasteur Institutes at Coonoor, Colombo, Bombay, etc, during my deputation in 1936, a few samples of the vaccine (Veterinary) for prophylactic vaccination against rabies in animals were prepared for tests at the beginning of this year. However the preparation of the same is now being carried on in the Research Section.

Fowl-pox.—As indicated in the provious year's report, the work on Fowl-pox was taken up again at the beginning of the year by infecting eight pigeons with both local and foreign strains of the virus material that had been collected and preserved last year. Most of the birds took up the infection well and material Fowl-pox virus attenuated by passaging through pigeons was collected for further work but latterly this work is also being conducted in the Research Section under the Veterinary Research Officer.

Strangles.—A small quantity of strangles streptococcal vaccine was prepared at the commencement of the year from a strain of streptococci kindly sent by the Imperial Institute of Veterinary Research, Muktesar, but as there was no demand for the same it could not then be given a trial in the field.

General.

Education.—Twenty-two Veterinary Graduates from different places have undergone short course training in this Institute during the last four years including the following seven candidates selected for training during the year under report :—

	Messrs.			
1.	C. T. C. Menon	...	...	Cochin State.
2.	G. M. Mehta	...	...	Bhavanagar State.
3.	P. G. R. Naidu	...	...	Mysore.
4.	B. Chandrasekhar	...	...	Mysore.
5.	Paul Joseph	...	...	Cochin State.
6.	K. J. Simon	...	...	Do
7.	L. B. Phadaki	...	...	Dharwar.

The Institute is becoming increasingly popular as a place of scientific as well as of general interest, attracting every year a number of distinguished visitors, both official and non-official from within and also from outside the State.

During the year under report, the Institute had the honour of being graciously visited by His Highness the Maharaja of Mysore, along with the Dewan, and also by His Highness the Maharaja of Gwalior who were pleased to go round all the different sections of the Institute evincing a keen interest in their working.

Rajamantrapravina N. Madhava Rau, B.A., B.L., Second Member of Council, Sir John Russel, D.SC., F.R.S., Dr. Wright, Sir Jagadish Prasad, Member of the Viceroy's Executive Council, Sir Atul Chatterjee, Retired High Commissioner for India, Major Braughton, Col. Olver, Animal Husbandry Expert to the Government of India and N. C. Mehta, Esq., I. C. S., Officiating Vice-Chairman, Imperial Council of Agricultural Research, were also pleased to visit the Institute and to go round all the sections.

The following were some of the other distinguished visitors to this Institute during the year under report :—

1. The Agricultural Advisor to the Government of Goa.
2. Mr. Rama Verman, Secretary to the Government of Cochin, with Mr. Adik Sett.
3. Mr. B. K. Badami, Director, Civil Veterinary Department, Hyderabad, Deccan.
4. Kazi Md. Zainullabdin—Hyderabad Civil Service.
5. Mr. J. J. Pelczynski, Journalist, Poland.
6. Dr. S. Dakshina Murthi, M.B., D.P.H., D.T.M. & H. (Eng.), Madras Public Health Service.
7. Mr. and Mrs. William H. Couklin, California, U.S.A.
8. Miss O. E. Hornby's Girl Students (Mission school).
9. Students of the Co-operative Training Class.
10. Party from Karnataka Sahitya Parishat.
11. Mr. R. W. Ralla Ram, Sciabae, Jumna, Allahabad.
12. Kumararaja Sahib of Narsaraopet.
13. Miss Selina Pereira.
14. ,, Rerna Jayavardhana.
15. ,, Hilda Nigris.
16. Mr. Fernando.

(Visitors from Ceylon).

17. Mr. Stanley Jepson—The times of India—Illustrated weekly—Bombay.
18. Mrs. Stanley Jepson—13 Marine Lines, Bombay.
19. Students of the Intermediate College, Bangalore.
20. Mr. and Mrs. John D. Frosst, Montreal, Canada.

Acknowledgments.—Before concluding this report, I feel it my duty to thank all those officers of the Agricultural, Live Stock and Civil Veterinary Departments of the State who have co-operated in the work of this Institute during the year. My thanks are also due to all those officers, both in and outside India, who have kindly arranged to send their publications and the Annual Reports of their departments in exchange for the Annual Reports of this Institute. I also offer my best thanks to the Directors and other Officers of all the Biological Institutes who kindly arranged to send certain bacterial cultures, etc., for experiments in this Institute during the year under report.

In concluding this report, I wish to make a special mention of the good work done during the year by Mr. P. U. Nayar, as Bacteriological Assistant and Dr. P. M. Narayanaswami Naidu as Veterinary Research Officer. I also take this opportunity to place on record my deep appreciation of the valuable services rendered by the other staff of this Institute, executive as well as ministerial, with great zeal and loyalty although they had to work overtime very often to cope with the increasing work in this Institute.

S. D. ACHAR,

Superintendent,
Serum Institute.

REPORT OF WORK DONE IN THE RESEARCH SECTION OF THE MYSORE SERUM INSTITUTE, DURING 1936-37.

(Dr. P. M. Narayanaswami Naidu, B.Sc., L.V.P., Sc. D., F. F.A.S., Veterinary Research Officer.)

My work for the Serum Institute during the period under review, consisted principally of Research work undertaken with a view to prepare and standardise new biological products in the form of vaccines and sera, other than those already manufactured in the Serum Institute. In taking up this work, preference was given to such of the products as are in good demand in the State, but which are being imported from outside.

Biologicals were prepared in each case by several of the different methods in vogue in different countries, and the products so obtained were subjected to searching laboratory tests in order to ascertain their relative merits under the conditions prevailing in this country, taking into consideration their absolute safety both to the animals and the persons handling these products, their efficacy, keeping qualities and economy. New biologicals were prepared against the following diseases :—

1. Rabies in dogs,
2. Anthrax in sheep and goats,
3. Strangles in horses and
4. Poultry diseases.

1. *Anti-Rabic Vaccines.*—The increasing education of the general public to the dread of Hydrophobia in human beings transmitted by a rabid dog, is sufficiently impressive to justify the Institution of measures intended to reduce the incidence of this abominable disease in man by prophylactic vaccination of the normal carrier-dog. Ever since the value of Pasteur's classical work on anti-rabic vaccination became established, a host of workers, notably from Japan, U. S. A., Italy, France and Germany have contributed to the literature upon the practical application of prophylactic vaccination of dogs against rabies and in every case data have accumulated to show that a significant decrease in the incidence of this disease in dogs has resulted. In Mysore, it is clear, that, though the institution of measures for the prophylactic inoculation of dogs against rabies is unlikely to stamp out the ravage at least within a measurable period of time, it should, if really efficient, provide a barrier between the disease in its natural host, the dog, especially the street dog, and implantation in adventitious hosts such as man and his domesticated animals.

It is also clear, that even for application on a small scale in the field, the vaccine must be innocuous and easily administered. For these reasons, the established methods of vaccinations founded on Pasteur's original formula and its numerous modifications,—which are in vogue in this country—which require repeated injections (7 to 14) over a considerable period (1 to 3 weeks) are not without defects and any investigation upon the relative merits of a particular vaccine can be limited to those which can be given at one or at the most two injections.

The method of dealing with this important and only source of human infection is far from satisfactory in our State. While anti-rabic vaccinations are made free to persons exposed to the danger of infection from suspected dogs, the dog owner has got to pay a considerable sum to get his animals protected against the disease. At present, the vaccine is got from Coonoor at the cost of the owner, each course of seven injections necessary for protecting one dog costing him from Rs. 6 to Rs. 7 which is indeed prohibitive for poor dog owners. The result is, that only a negligible percentage of valuable and pet dogs are given the benefit of these vaccinations, while the others including a large number of ownerless street dogs are left untreated and continue to be a prolific source of danger to human beings. It was therefore

thought very desirable to undertake experiments with a view to produce in the State a Vaccine as inexpensive as possible, so as to make it accessible to all owners of dogs and at the same time easy of handling, while being absolutely innocuous and comparable in efficiency to any other imported vaccines.

With these objects in view two different vaccines were prepared.

1. *A Carbolised Glycerinised Vaccine after the method of Umeno and Doi of Japan.*—In a single dose of 5 c.c. injected subcutaneously into an average sized dog (weighing about 15 lbs.), it is said to protect the latter against subsequent infections of the disease for a period of about one year. In Japan over a million dogs are said to have been protected with this vaccine ever since its inception and the authors claim more than 90 per cent success for this method of anti-rabic prophylaxis.

Experiments with this vaccine are for the present confined to the laboratory animals, rabbits and guinea-pigs. These were subjected to single subcutaneous injections of 1 c.c. and half a c.c. of the vaccine respectively. At intervals of two —three months, batches of these animals selected at random from the immunised lots, along with sufficient number of unimmunised controls were infected sublingually in rabbits and intra-ocularly in guinea-pigs with a suitable dose of Rabies street virus of proved virulence. These animals are under observation and continue to remain so far at least six months after infection. Any animal dying within this period is examined carefully and the cause of death ascertained by microscopical, cultural and animal inoculation tests. The experiments are yet inconclusive, but the results so far appear to be encouraging, inasmuch as, most of the vaccinated animals are still alive although four months have elapsed after infection, whereas all the controls, infected simultaneously with the same dose and strain of street virus succumbed between the second and third week after infection, developing typical paralysis.

Whatever its advantages are, one great drawback with this vaccine is its viscidity, which renders its filtration as well as drawing through ordinary syringes difficult. It is also somewhat expensive on account of the large qnantities of glycerine it requires.

2. *The Italian Modification of Sir Semples Carbolised Vaccine.*—Excellent results are claimed with the use of this product as a prophylactic measure in only two injections of 5 to 10 c.c., subcutaneously at an interval of a week. The vaccine is easier to filter and handle and much cheaper to prepare although its keeping qualities are not so good as the Japanese Vaccine.

Experiments undertaken with this vaccine on a large number of rabbits and guinea-pigs with a view to ascertain its efficacy are promising and augurs a great future to this method of anti-rabic campaign not only in the State, but throughout the country. Opportunities are also being availed of to try this product on the field in case of dogs, whose owners are unable to meet the cost of Coonoor Vaccine. Already five dogs have been vaccinated, three as prophylactic measure only and two after being bitten by a definitely positive rabid dog, taking care to keep them under strict surveillance and constant observation for a reasonable length of time. In the case of the bitten dogs, the number of injections varied from four to seven, depending upon the nearness of the site of bite to the animal's brain. It is now nearly seven months since one of the dogs has been treated with the new vaccine and it has not shown any symptoms suggestive of rabies so far. The other dog was treated only recently and is under observation.

II. ANTHRAX IN SHEEP AND GOATS.

Another disease of considerable importance and which needs immediate attention is Anthrax in sheep and goats.

Severe outbreaks of this disease are taking away a large toll of animals every year, especially in parts of Chitaldrug, Mysore and Tumkur Districts, causing an unaccountable loss to the sheep owners, whose sole means of existence appears to be this class of Live Stock.

Prophylactic vaccinations against the disease were being done hitherto with a vaccine imported from Australia. In spite of this, yearly outbreaks of Anthrax

have not only continued to rage among sheep, but constituted as it is, of attenuated live spores of the organisms causing the disease, it has also at times endangered both the live-stock and the persons using them with fatal infections.

Good deal of work has been done on Anthrax immunisation by workers abroad and various methods of vaccinations are being practiced against the disease. Out of these, however, the three worthy of consideration are :—

1. The French "Cuti-Vaccine," after the method of Besredka.
2. The German "Lipoid Vaccine," after the method of Hsruska, and
3. The Italian "Carbozoo or Saponine Vaccine," after the method of Mazzucchi.

In order to give a fair trial to all these vaccines before preferring any one as the best method of preventive vaccination under the prevailing conditions in Mysore, it was thought necessary to prepare all the three vaccines and subject them to critical tests, both in the laboratory and on the field. The strain of Anthrax bacilli isolated from a natural outbreak of the disease was attenuated at higher temperature until its virulence corresponded to that of classical Pasteur II strain got from the Pasteur Institute, Paris, and formed the basis of all the vaccines. The object in selecting the local strain in preference to Pasteur II itself was on account of its non-pathogenicity to human beings, as was evidenced by the entire absence of any malignant pustule or any other untoward effect among the villagers in spite of their handling the Anthrax carcasses freely and using their meat liberally. This latter consideration is of no little importance in view of the risks to which persons handling the vaccine are exposed. Another consideration in chosing the local strain for making the vaccine, though of seemingly minor importance, was to increase the efficacy of the product through autogenicity.

All these vaccines were prepared according to the methods described by their authors and extensive laboratory tests undertaken on 62 sheep and 70 goats, in order to ascertain how far, if at all, the products were innocuous and efficient. The results of these experiments were very encouraging, in so far as the vaccines proved not only harmless to sheep and goats, but also all these animals definitely resisted a subsequent artificial infection with a dose of the virulent Anthrax cultures which killed the unvaccinated controls from 18 to 24 hours.

It could be interred from the above experiments, that all the three vaccines were of equal merits so far as laboratory conditions were concerned and remained to be tested on the field. For this purpose, 9 sheep and 10 goats were bought in a village where these animals are faced with yearly outbreaks of the disease and 18 of these were divided into three batches of six animals each, each batch consisting of three sheep and three goats. One goat was kept as control. Field tests were proposed to be undertaken in the village itself. The batches were kept well separated from each other and received suitable doses of the vaccine, each batch getting one particular vaccine. Temperatures were recorded twice daily, morning and evening, and the animals were kept under constant observation throughout the period for noting any ill effects after vaccination. Within three days after vaccination, batches I and II which received Besredkas's Cuti Vaccine and the Lipoid Vaccine, respectively, showed signs of grave illness and began dying until in about five days none of the animals of these two batches survived. *Post mortem* examination undertaken on the carcasses confirmed the diagnosis for Anthrax. Entirely different was the behaviour of the III batch of animals receiving the Saponine Vaccine. Besides a swelling at the seat of vaccination and a slight rise of temperature on the second and third day, no other obvious symptom of illness was noticed. After 10 days these animals along with the unvaccinated control were given 0. 25 c.c. of a highly virulent culture of Anthrax spores. The control died within 24 hours showing typical symptoms of Anthrax, while the vaccinated lot remained unaffected even after a week. In order to know how these animals reacted to a natural outbreak of the disease, they were left in a flock along with unvaccinated ones. As was expected, the disease appeared in the flock after about five months, destroying most of the animals of the flock of nearly 125 heads of sheep and goats. Out of the 14 sheep and 9 goats surviving after the outbreak, were found included the three sheep and three goats protected with Saponine Vaccine. Being convinced of the satisfactory result of preliminary field tests, it was thought to introduce the vaccine as a more general method of prophylaxis against Anthrax in the affected areas. Accordingly, 176 animals belonging to one of the

leading gentlemen of the village Hirehalli, were protected with Saponine Vaccine; but before the immunity established itself, as a result of this measure, some loss of animals could not be avoided in the face of a raging outbreak of the disease prevailing at that time. From the reports received, there were 14 deaths among the animals of the flock within about a fortnight after vaccination, after which not a single animal died of Anthrax. On the other hand, nearly 50 per cent of the animals are reported to have succumbed to the disease in the unprotected flocks of the same village. Attempts will be made next year to undertake a more rigorous campaign of protective vaccinations by the Italian method, before the expected onset of the disease in the village and by this means, it is hoped to get the disease under control. Incidentally, it may be of interest to mention here that in undertaking a work like this, which is the first of its kind in India, the State will have given a good lead towards controlling one of the highly contagious diseases of Live Stock.

III. STRANGLES IN HORSES.

About the end of the year under report, a serious outbreak of Strangles was encountered among the horses of Mysore unit at Mysore which, subsequently spread to the animals of the Mysore Lancers at Bangalore and those of the Hessarghatta Farm. Preventive vaccinations with a good strangles vaccine was therefore indicated in order to bring the disease under control and to prevent its spread to healthy animals. Experiments were undertaken to prepare an autogenous vaccine and make it available for protecting the Military horses early.* This vaccine was being got hitherto from Muktesar.

IV. POULTRY DISEASES.

A large variety of diseases, most of which fatal to the domestic fowl are prevailing in the State. Literature on tropical poultry diseases and methods of controlling them are, unfortunately, meagre and unsatisfactory, so that the success of making poultry farming a remunerative occupation in the State is a matter of progressive research on problems affecting the health of birds. In view of the endeavours made by the Government of Mysore to make poultry farming one of the practical items in their extensive programme of rural reconstruction work in the State, it became necessary almost simultaneously, to institute research work on poultry diseases and their control. For this reason a scheme of research work " On Prophylactic methods against poultry diseases in the State " costing about Rs. 2,500 and to operate next year was submitted to the Government and received their kind sanction. In undertaking the work suggested in the scheme, Mysore is again foremost to start a work of this kind, on what may be regarded as one of the most pressing live-stock problems of the country at present.

As directed by the Government in their Order No. D. 8583-85—C. V. 88-36-2, dated 5—10th June 1937, a more elaborate scheme extending over a period of five years has also been prepared and submitted to them for placing before the Animal Husbandry Wing Meeting of the Imperial Council of Agricultural Research, when they meet during October next at Delhi for financing half the total cost of the scheme, the other half being met by the State.

In the meanwhile work has already been started on the survey of poultry diseases prevailing in the State and methods of controlling them. The latter implies the working out of specific products such as vaccine and sera and chemotherapeutics.

(*a*) *Specific Products.*—The only product being prepared and tested under this head is the Chicken-pox vaccine. Last year's work on the preparation of this vaccine, which was being got hitherto from Muktesar, was continued. Vaccines were prepared by different methods, but the emulsion form was preferred to the dry powder form, as the latter failed to satisfy all the laboratory and field tests to which it was put.

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*The Vaccine was made ready for use during the beginning of the next official year, *viz.*, 1937-38. Protective vaccination was undertaken on about 600 horses of the Mysore Unit and Mysore Lancers. There have not been any fresh attacks of the disease after vaccinations in the regimental animals.

The emulsion of fluid vaccine consisted of a fine suspension of the pox virus obtained either directly from the fowl or after a series of passages through the pigeons, in 80 per cent sterile glycerine. The following virus materials were used :—

1. Pigeon-pox virus.
2. Attenuated Fowl-pox virus (Attenuation brought about by passaging Fowl-pox virus in pigeons).
3. Attenuated Fowl-pox virus (Attenuation brought about by drying FP Virus at 40° C. and in vacuum over P_2O_5).
4. Fowl-pox virus.

Laboratory tests undertaken with these vaccines showed that pure pigeon-pox virus failed to confer any immunity to chicks against the disease. The safest vaccine to use was pigeon passaged virus. In no instance was any severe reaction observed. Field tests were done with this vaccine on nearly 500 chicks belonging to some private individuals round about Bangalore, in the course of a natural outbreak of the disease. The result was quite satisfactory, in that no further attacks were encountered among the vaccinated lot, while many of the unvaccinated controls succumbed to the disease. But in a subsequent outbreak of the same disease in this flock only about three months later, the birds were found to be no longer immune and most of them developed the disease indicating that the immunity conferred by this vaccine was probably not of longer duration. The other vaccines will also be put to test in course of time in order to compare their efficacy.

Chemotherapeutic Measures.—Among the other measures undertaken those worthy of mention are :

1. *Dosing for Worms.*—As worms were found to be causing considerable damage to the poultry both directly and indirectly, it was necessary to undertake the study of different anthelmentics, so as to ultimately prepare a composition most suitable for the complete eradication of intestinal worms, especially the round worms and the tape worms. These drugs are being tried on poultry.

2. *Treatment of certain Specific Diseases of the Alimentary Tract.*—Prophylactic vaccinations against most of the specific diseases of the house-fowl, and especially of the alimentary tract, have so far been unsuccessful, excepting perhaps in case of fowl typhoid. Bearing in mind the powerful oligodynamic action of metals on some of the specific disease-producing agencies, it was proposed to work out a line of attack of this important class of diseases through prescriptions containing principally of metals in colloidal state. Colloidal silver which is the easiest to obtain was therefore chosen and two compositions " Gastrase " and " Ventrase " were prepared ; Ventrase for diseases accompanied by profuse diarrhœa and Gastrase in ailments without this complication. These mixtures are being tried in such diseases as infectious enteritis, Ranikhet disease, Coccidiosis, Pullorum disease, etc., with encouraging results.

3. Similarly, a cold mixture against common colds in chicks has been made and a head dip or head wash is evolved for treating cases of Roup.

4. Studies undertaken on an exceedingly common trouble of the Farm-birds in Mysore, *viz.*, Neurolymphomatosis of Range paralysis, have suggested the incrimination of a Vitamin deficiency, especially that of Vitamin C., as the probable cause of this disease. Special feed and greens particularly rich in this vitamin are being given to these birds. Although it is too early to claim any definite success to this line of treatment, the results being arrived at are undoubtedly of great value.

A systematic investigation on this and other problems will be undertaken next year under the auspices of the scheme sanctioned by the Government for this purpose.

APPENDIX I.—Statement showing the quantity of Rinderpest Bull Virus produced, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of virus used in the Institute including wastage, etc.	Total	Stock of virus on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.	Ozs.
July 1936	...	31	31	...	1	29	30	4
August ,, ...	4	22	26	...	...	26	26	...
September ,, ...	...	29	29	...	...	29	29	...
October ,, ...	...	37	37	...	...	34	34	3
November ,, ...	8	15	18	...	...	18	18	...
December ,, ...	...	18	18	...	...	18	18	...
January 1937	...	24	24	...	...	20	20	4
February ,, ...	4	38	42	14	...	24	38	4
March ,, ...	4	52	56	15	...	36	51	5
April ,, ...	5	27	32	...	...	32	32	nil
May ,, ...	nil	22	22	...	...	22	22	nil
June ,, ...		35	35	...	...	29	29	6
For the year ...	nil	353 ozs. or 8,825 c. c	353 ozs. or 8,825 c. c.	29 ozs. or 725 c.c.	1 oz. or 25 c. c.	317 ozs. or 7,925 c. c.	347 ozs. or 8,675 c. c.	6 ozs. or 150 c. c.

APPENDIX II.—Statement showing the quantity of Rinderpest Goat Virus produced, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity used in the Institute including wastage, etc.	Total	Stock of Goat Virus on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	c. c.	c. c.	c. c.	c. c.	c. c.	c. c.	c. c.	c. c.
July 1936	195	1,335	1,530	255	105	1,065	1,425	105
August ,, ...	105	1,065	1,170	...	105	855	960	210
September ,, ...	210	1,170	1,380	360	270	660	1,290	90
October ,, ...	90	1,245	1,335	825	345	165	1,335	...
November ,, ...	...	3,960	3,960	2,475	135	300	2,910	1,050
December ,, ...	1,050	8,130	9,180	7,125	195	1,050	8,370	810
January 1937	810	9,270	10,530	3,495	765	4,485	8,745	1,785
February ,, ...	1,785	8,850	10,635	6,090	1,110	2,340	9,540	1,095
March ,, ...	1,095	9,915	11,010	4,795	1,110	3,630	9,525	1,485
April ,, ...	1,485	10,005	11,490	6,825	1,230	1,770	9,825	1,665
May ,, ...	1,665	4,470	6,135	1,950	810	2,325	5,085	1,050
June ,, ...	1,050	3,150	4,200	2,205	225	1,680	4,110	90
For the year ...	195	63,015	63,210	36,390	6,405	20,325	63,120	90

APPENDIX III.—Statement showing the quantity of Anti-Rinderpest Serum produced, supplied and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of serum used in the Institute including wastage, etc.	Total	Stock of Serum on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	Doses.	Doses.	Doses.	Doses.	Doses.	Doses.	Doses.	Doses.
July 1936	54,350	...	54,350	..	12,000	50	12,050	42,300
August ,, ...	42,300	27,800	70,100	...	11,000	150	11,150	58,950
September ,, ...	58,950	...	58,950	2,500	16,250	...	18,750	40,200
October ,, ...	40,200	...	40,200	...	10,250	600	10,850	29,350
November ,, ...	29,350	77,750	1,07,100	3,300	20,000	...	23,300	83,800
December ,, ...	83,800	...	83,800	4,100	12,600	50	16,750	67,050
January 1937	67,050	..	67,050	1,550	11,000	...	12,550	54,500
February ,, ...	54,500	..	54,500	7,800	14,000	...	21,800	32,700
March ,, ...	32,700	..	32,700	5,500	10,000	...	15,500	17,200
April ,, ...	17,200	..	17,200	2,500	14,000	500	17,000	200
May ,, ...	200	77,700	77,900	2,200	2,000	...	4,200	73,700
June ,, ...	73,700	...	73,700	750	10,100	...	10,850	62,850
For the year ...	54,350	1,83,250	2,37,600	30,200	1,43,200	1,350	1,74,750	

APPENDIX IV.—Statement showing the quantity of Anti-Hæmorrhagic Septicæmia Serum produced, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of Serum used in the Institute including wastage, etc.	Total	Stock of Serum on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July 1936 ...	50,600	...	50,600	1,160	10,740	...	11,900	38,700
August ,, ...	38,700	...	38,700	900	15,260	...	16,160	22,540
September ,, ...	22,540	...	22,540	1,860	16,140	...	18,000	4,540
October ,, ...	4,540	3,200	7,740	1,000	5,860	...	6,860	1,880
November ,, ...	1,380	9,960	11,340	2,020	6,100	...	8,120	3,220
December ,, ...	3,220	10,700	13,920	...	...	...	...	13,920
January 1937 ...	13,920	...	13,920	...	4,100	...	4,100	9,820
February ,, ...	9,820	...	9,820	20	5,340	...	5,360	4,460
March ,, ...	4,460	...	4,460	1,920	...	...	1,920	2,540
April ,, ...	2,540	30,980	33,520	820	10,000	...	10,820	22,700
May ,, ...	22,700	...	22,700	720	15,200	...	15,920	6,780
June ,, ...	6,780	...	6,780	200	6,160	...	6,360	420
For the year ...	50,600	54,840	1,05,440	10,620	94,400	...	1,05,020	...

APPENDIX V.—Statement showing the quantity of Anti-Blackquarter Serum produced, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of Serum used in the Institute including wastage, etc.	Total	Stock on hand on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July 1936 ...	49,960	...	49,960	80	5,300	...	5,380	44,580
August ,, ...	44,580	...	44,580	400	2,500	...	2,900	41,680
September ,, ...	41,680	...	41,680	860	3,500	...	3,880	37,820
October ,, ...	37,820	...	37,820	420	200	...	620	37,200
November ,, ...	37,200	...	37,200	120	600	...	720	36,480
December ,, ...	36,480	...	36,480	300	...	...	300	36,180
January 1937 ...	36,180	...	36,180	...	500	...	500	35,680
February ,, ...	35,680	...	35,680	...	5,000	...	5,000	30,680
March ,, ...	30,680	...	30,680	600	—500	...	1,100	29,580
April ,, ...	29,580	...	29,580	700	...	...	700	28,880
May ,, ...	28,880	...	28,880	120	5,000	...	5,120	23,760
June ,, ...	23,760	...	23,760	520	2 ,000	...	2,520	21,240
For the year ...	49,960	...	49,960	3,620	25,100	...	28,720	...

APPENDIX VI.—Statement showing the quantity of Anti-Anthrax Serum produced, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of Serum used in the Institute including wastage, etc.	Total	Stock of Serum on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July 1936 ...	24,620	...	24,620	3,000	...	...	3,000	21,620
August ,, ...	21,620	...	21,620	3,520	1,000	...	4,520	17,100
September ,, ...	17,100	...	17,100	3,060	500	80	3,640	13,460
October ,, ...	13,460	...	13,460	500	...	200	700	12,760
November ,, ...	12,760	...	12,760	2,200	2,100	...	4,300	8,460
December ,, ...	8,460	...	8,460	...	...	...	...	8,460
January 1937 ...	8,460	...	8,460	300	...	80	380	8,080
February ,, ...	8,080	...	8,080	680	...	...	680	7,400
March ,, ...	7,400	...	7,400	1,420	...	...	1,420	5,980
April ,, ...	5,980	4,380	10,360	4,020	4,260	...	8,280	2,080
May ,, ...	2,080	25,200	27,280	3,680	...	...	3,680	23,600
June ,, ...	23,600	...	23,600	800	...	...	800	22,800
For the year ...	24,620	29,580	54,200	23,180	7,860	360	31,400	...

APPENDIX VII.—Statement showing the quantity of Anti-Fowl Cholera Serum produced, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of serum used in the Institute including wastage, etc.	Total	Stock of Serum on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	Doses.	Doses.	Doses.	Doses.	Doses.	Doses.	Doses.	Doses.
July 1936	6,050	...	6,050	275	...	...	275	5,775
August ,, ...	5,775	...	5,775	200	200	...	400	5,375
September ,, ...	5,375	...	5,375	...	125	...	125	5,250
October ,, ...	5,250	...	5,250	...	50	25	75	5,175
November ,, ...	5,175	...	5,175	...	50	...	50	5,125
December ,, ...	5,125	...	5,125	225	...	25	250	4,875
January 1937	4,875	...	4,875	...	...	...	...	4,875
February ,, ...	4,875	...	4,875	...	...	...	...	4,875
March ,, ...	4,875	...	4,875	100	150	...	250	4,625
April ,, ...	4,625	...	4,625	175	225	...	400	4,225
May ,, ...	4,225	..	4,225	...	...	..	...	4,225
June ,, ...	4,225	17,400	21,625	...	300	...	300	21,325
For the year ...	6,050	17,400	23,450	975	1,100	50	2,125	...

APPENDIX VIII.—Statement showing the quantity of Hæmorrhagic Septicæmia Vaccine prepared, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of Vaccine used in the Institute including wastage, etc.	Total	Stock of Vaccine on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	Doses.	Doses.	Doses.	Doses.	Doses.	Doses.	Doses.	Doses.
July 1936	7,450	24,500	31,950	12,250	8,300	...	20,650	11,300
August ,, ...	11,300	12,100	23,400	3 100	4,000	...	7,100	16,300
September ,, ...	16,300	27,400	43,700	2,400	10,000	100	12,500	31,200
October ,, ...	31,200	...	31,200	7,100	3,000	...	10,100	21,100
November ,, ...	21,100	...	21,100	1,150	4,000	...	5,150	15,950
December ,, ...	15,950	...	15,950	500	...	...	500	15,450
January 1937	15,450	...	15,450	200	5,000	...	5,200	10,250
February ,, ...	10,250	...	10,250	700	5,000	...	5,700	4,550
March ,, ...	4,550	14,250	18,800	...	5,000	...	5,000	13,800
April ,, ...	13,800		13,800	1,650	5,000	...	6 650	7,150
May ,, ...	7,150	10,000	17,150	1,350	6,000	150	7,500	9,650
June ,, ...	9,650	23,150	32,800	1,900	2,100	...	4,000	28,800
For the year ...	7,450	1,11,400	1,18,850	32,400	57,400	250	90,050	...

APPENDIX IX.—Statement showing the quantity of Blackquarter Filtrate prepared, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of Filtrate used in the Institute including wastage, etc.	Total	Stock of Filtrate on the last day of the month
				Mysore Civil Veterinary Dedartment	Outside the State			
	Doses.	Doses.	Doses.	Doses.	Doses.	Doses.	Doses.	Doses.
July 1936	9,850	...	9,850	...	4,000	..	4,000	5,850
August ,, ...	5,850	...	5,850	...	3,000	...	3,000	2,850
September ,, ...	2,850		2,850	...	...	...	...	2,850
October ,, ...	2,850	7,500	10,350	...	3,000	...	3,000	7,350
November ,, ...	7,350	..	7,350	...	...	...	...	7,350
December ,, ...	7,350	...	7,350	...	...	...	..	7,350
January 1937	7,350	...	7,350	...	...	...	...	7,350
February ,, ...	7,350	...	7,350	...	...	...	..	7,350
March ,, ...	7,350	...	7,350	...	...	...	...	7,350
April ,, ...	7,350	...	7,350	...	...	...	...	7,350
May ,, ...	7,350	..	7,350	...	2,000	...	2,000	5,350
June ,, ...	5,350	...	5,350	...	2,000	..	2,000	3,350
For the year ...	9,850	7,500	17,350	...	14,000	...	14,000	...

APPENDIX IV.—Statement showing the quantity of Anti-Hæmorrhagic Septicæmia Serum produced, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of Serum used in the Institute including wastage, etc.	Total	Stock of Serum on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July 1936	50,600	...	50,600	1,160	10,740	...	11,900	38,700
August ,, ...	38,700	...	38,700	900	15,260	...	16,160	22,540
September ,, ...	22,540	...	22,540	1,860	16,140	...	18,000	4,540
October ,, ...	4,540	3,200	7,740	1,000	5,360	...	6,360	1,380
November ,, ...	1,380	9,960	11,340	2,020	6,100	...	8,120	3,220
December ,, ...	3,220	10,700	13,920	...	...	...	...	13,920
January 1937	13,920	...	13,920	...	4,160	...	4,160	9,820
February ,, ...	9,820	...	9,820	20	5,340	...	5,360	4,460
March ,, ...	4,460	...	4,460	1,920	...	...	1,920	2,540
April ,, ...	2,540	30,980	33,520	820	10,000	...	10,820	22,700
May ,, ...	22,700	...	22,700	720	15,200	...	15,920	6,780
June ,, ...	6,780	...	6,780	200	6,160	...	6,360	420
For the year ...	50,600	54,840	1,05,440	10,620	94,400	...	1,05,020	...

APPENDIX V.—Statement showing the quantity of Anti-Blackquarter Serum produced, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of Serum used in the Institute including wastage, etc.	Total	Stock on hand on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July 1936	49,960	...	49,960	80	5,300	...	5,380	44,580
August ,, ...	44,580	...	44,580	400	2,500	...	2,900	41,680
September ,, ...	41,680	...	41,680	860	3,500	...	4,360	37,320
October ,, ...	37,320	...	37,320	420	200	...	620	37,200
November ,, ...	37,200	...	37,200	120	600	...	720	36,480
December ,, ...	36,480	...	36,480	300	...	...	300	36,180
January 1937	36,180	...	36,180	...	500	...	500	35,680
February ,, ...	35,680	...	35,680	...	5,000	...	5,000	30,680
March ,, ...	30,680	...	30,680	600	—500	...	1,100	29,580
April ,, ...	29,580	...	29,580	700	...	...	700	28,880
May ,, ...	28,880	...	28,880	120	5,000	...	5,120	23,760
June ,, ...	23,760	...	23,760	520	2,000	...	2,520	21,240
For the year ...	49,960	...	49,960	3,620	25,100	...	28,720	...

APPENDIX VI.—Statement showing the quantity of Anti-Anthrax Serum produced, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of Serum used in the Institute including wastage, etc.	Total	Stock of Serum on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July 1936	24,620	...	24,620	3,000	...	...	3,000	21,620
August ,, ...	21,620	...	21,620	3,620	1,000	...	4,520	17,100
September ,, ...	17,100	...	17,100	3,060	500	80	3,640	13,460
October ,, ...	13,460	...	13,460	500	...	200	700	12,760
November ,, ...	12,760	...	12,760	2,200	2,100	...	4,300	8,460
December ,, ...	8,460	...	8,460	...	...	...	...	8,460
January 1937	8,460	...	8,460	300	...	80	380	8,080
February ,, ...	8,080	...	8,080	660	...	...	680	7,400
March ,, ...	7,400	...	7,400	1,420	...	...	1,420	5,980
April ,, ...	5,980	4,380	10,360	4,020	4,260	...	8,280	2,080
May ,, ...	2,080	25,200	27,280	3,680	...	...	3,680	23,600
June ,, ...	23,600	...	23,600	800	...	...	800	22,800
For the year ...	24,620	29,580	54,200	23,180	7,860	360	31,400	...

APPENDIX X.—Statement showing the quantity of Blackquarter Bacterin prepared, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of Bacterin used in the institute including wastage, etc.	Total	Stock of Bacterin on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July 1936	18,050	...	18,050	14,400	300	...	14,700	3,350
August ,, ...	3,350	14,650	18,000	4,900	2,500	...	7,400	10,600
September ,, ...	10,600	11,100	21,700	9,400	500	...	9,900	11,800
October ,, ...	11,800	15,650	27,450	12,200	...	...	12,200	15,150
November ,, ...	15,150	...	15,150	5,800	700	...	6,500	8,650
December ,, ...	8,650	...	8,650	3,900	...	...	3,900	4,750
January 1937	4,750	12,750	17,500	2,200	100	...	2,300	15,200
February ,, ...	15,200	...	15,200	8,750	...	...	8,750	6,450
March ,, ...	6,450	20,950	27,400	11,600	500	...	12,100	15,300
April ,, ...	15,300	4,200	19,500	17,700	...	...	17,700	1,800
May ,, ...	1,800	17,850	19,650	19,300	...	...	19,300	350
June ,, ...	350	51,200	51,550	23,350	...	...	23,350	28,200
For the year ...	18,050	1,48,250	1,66,300	1,33,500	4,600	...	1,38,100	...

APPENDIX XI.—Statement showing the quantity of Sheep-pox Vaccine prepared, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of Vaccine used in the Institute including wastage, etc.	Total	Stock of Vaccine on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	c. c.	c. c.	c. c.	c. c.	c. c.	c. c.	c. c.	c. c.
July 1936	25	67	92	65	...	...	65	7
August ,, ...	7	67	74	46	4 plus 2 cc. sent to Madras for experiments	4	56	18
September ,, ...	18	40	58	27	..	..	27	31
October ,, ...	31	...	31	11	...	...	11	20
November ,, ...	20	50	70	42	2	...	44	26
December ,, ...	26	105	131	68	...	...	68	63
January 1937	63	270	333	187	...	8·00	195	138
February ,, ...	138	54	192	90	4	...	94	98
March ,, ...	98	40	138	125	4	9	138	...
April ,, ...	..	87·145	87·145	53	5	17·145	75·145	12
May ,, ...	12	80	92	49	10	...	59	33
June ,, ...	33	60	93	56	7	6	69	24
For the year ...	25	920·145	945·145	839	36 plus 2 cc. sent to Madras for experiments	44·145	921·145	...

APPENDIX XII.—Statement showing the quantity of Fowl Cholera Vaccine produced, issued and balance remaining monthly for the year 1936-37.

Month	Balance at the beginning of the month	Quantity produced during the month	Total	Quantity supplied to		Quantity of Vaccine used in the Institute including wastage, etc.	Total	Stock of Vaccine on the last day of the month
				Mysore Civil Veterinary Department	Outside the State			
	Doses	Doses	Doses	Doses	Doses	Doses	Doses	Doses
July 1936	5,800	...	5,800	...	...	...	...	5,800
August ,, ...	5,800	...	5,800	...	200	...	200	5,600
September ,, ...	5,600	...	5,600	...	100	...	100	5,500
October ,, ...	5,500	...	5,500	...	50	50	100	5,400
November ,, ...	5,400	...	5,400	...	100	50	150	5,250
December ,, ...	5,250	...	5,250	100	...	...	100	5,150
January 1937	5,150	...	5,150	...	...	...	...	5,150
February ,, ...	5,150	...	5,150	...	...	...	...	5,150
March ,, ...	5,150	...	5,150	50	200	100	350	4,800
April ,, ...	4,800	...	4,800	300	200	...	500	4,300
May ,, ...	4,300	...	4,300	...	...	...	...	4,300
June ,, ...	4,300	...	4,300	...	200	...	200	4,100
For the year ...	5,800	...	5,800	450	1,050	200	1,700	...

APPENDIX XIII.

Statement showing the quantities of Sera and other products, supplied and balance remaining during the year 1936-37.

Name of product	Opening balance	Quantity produced	Total	Quantity supplied to		Quantity used in the Institute including wastage, etc.	Total	Stock on hand at the close of the year
				Mysore Civil Veterinary Department	Outside the State			
1. Rinderpest bull virus ...	Doses ...	Doses 353 ozs. or 8,825 cc.	Doses 353 ozs. or 8,825 cc.	Doses 29 ozs. or 725 cc.	Doses 1 oz. or 25 cc.	Doses 317 ozs. or 7,925 cc.	Doses 347 ozs. or 8,675 cc.	Doses 6 ozs. or 150 cc.
2. Rinderpest goat virus ...	195 cc	63,015 cc.	63,210 cc.	86,890 cc.	6,405 cc.	20,325 cc.	63,120 cc.	90 cc.
3. Anti-Rinderpest Serum ...	54,350	1,83,250	2,37,600	80,200	1,43,200	1,350	1,74,750	62,850
4. Anti-Hæmorrhagic Septicæmia Serum.	50,600	54,840	1,05,440	10,620	94,400	...	1,05,020	420
5. Anti-Blackquarter Serum ...	49,960	...	49,960	3,620	25,100	...	28,720	21,240
6. Anti-Anthrax Serum ...	24,620	29,580	54,200	23,180	7,860	860	31,400	22,800
7. Anti-Fowl Cholera Serum	6,050	17,400	23,450	975	1,100	50	2,125	21,325
8. Hæmorrhagic Septicæmia Vaccine.	7,450	1,11,400	1,18,850	32,400	57,400	250	90,050	28,800
9. Blackquarter Filtrate ...	9,850	7,500	17,350	...	14,000	...	14,000	3,350
10. Blackquarter Bacterin ...	18,050	1,48,250	1,66,300	1,33,500	4,600	...	1,38,100	28,200
11. Sheep-pox Vaccine ...	25·000	920·145	945·145	839·000	36·000 plus 2·000 sent to Madras for experiments	44·145	921·145	24·000 cc.
12. Fowl Cholera Vaccine ...	5,800	...	5,800	450	1,050	200	1,700	4,100

APPENDIX XIV.

Statement showing the products supplied to different Provinces, States, etc., during the year 1936-37.

Names of Places	Rinderpest bovine virus	Rinderpest goat virus	Rinderpest Serum	Hæmorrhagic Septicæmia Serum	Blackquarter Serum	Anthrax Serum	Fowl Cholera Serum	Blackquarter filtrate	Blackquarter Bacterin	Hæmorrhagic Septicæmia Vaccine	Sheep-pox Vaccine	Fowl Cholera Vaccine
		cc.	doses	doses	doses	doses	doses	doses	doses	doses		doses
Mysore	29 ozs. or 725 cc.	36,890	80,200	10,620	8,620	23,180	975	...	1,33,500	32,400	889·000 cc.	150
Hyderabad	...	...	1,25,000	91,000	22,000	7,500	200	14,000	2,000	57,000	...	200
Bhavanagar	1 oz. or 25 cc.	510	1,000	...	..	...	..	...	....	...	...	...
Indore		840	6,000	860	..	...	...	..	...	400	...	...
Bhopal		...	1,000	...	...	...	...	...	...	...	4 cc.	...
Coorg		630	1,500	...	...	...	525	...	...	...	....	400
Ramdurg		...	250	...	...	...	...	...	...	...	...	...
Baroda		...	2,100	1,000	...	...	...	...	...	...	...	...
Savanur		1,230	250	...	...	...	60	...	...	...	...	50
Jodhpur		...	1,000	...	...	...	...	...	...	...	...	...
Kolhapur		2,040	5,000	...	...	260	...	...	...	...	...	...
Ujjain		...	100	...	...	...	...	...	...	...	...	...
Cochin		...	...	440	...	...	75	...	...	...	...	150
Sangli		945	...	500	200	..	...	...	...	...	...	..
Trivandrum		...	...	300	...	100	...	...	...	...	...	...
Belgaum		...	...	100	100	...	...	...	...	...	...	...
Pudukkottai		...	...	200	2,800	...	...	...	2,400	...	12 cc..	...
Pondicherry		...	...	...	...	...	...	...	200	...	...	...
(U. P.) Agra		...	...	...	...	...	...	...	...	...	9 cc.	...
Kathiawar State... ...		210 (Morvi)	...	...	...	...	...	...	...	...	11 cc.	...
Colombo		...	...	...	...	...	100	...	...	...	...	100
Pallamkotah		...	...	...	...	...	50	...	...	...	...	50
Allahabad		...	...	...	...	...	100	...	...	...	...	100
Madras		...	...	...	...	...	...	...	...	...	2 cc. for experiments	...
Total ...	30 ozs. or 750 cc.	42,795	1,73,400	1,05,020	28,720	31,040	2,075	14,000	1,38,100	89,800	875.000 cc.	1,500

APPENDIX XV

Statement showing the details of Indents received for the first time during 1936-37.

Sl. No. and Name of Place	*Name of product*	*Quantity supplied*
		Doses
1. Kolhapur	Anti-Rinderpest Serum ...	5,000
	Anti-Anthrax Serum ...	260
	Rinderpest Goat Virus ...	2,040 cc.
2. Ujjain ...	Anti-Rinderpest Serum ...	100
3. Indore ...	Anti-Rinderpest Serum ...	6,000
	Hæmorrhagic Septicæmia Serum ...	860
	Hæmorrhagic Septicæmia Vaccine ...	400
	Rinderpest Goat Virus ...	840 cc.
4. Bhopal ...	Anti-Rinderpest Serum ...	1,000
	Sheep-pox Vaccine ...	4 cc.
5. Bhavanagar ...	Anti-Rinderpest Serum ...	1,000
	Rinderpest Bovine Virus ...	25 cc.
	Rinderpest Goat Virus ...	510 cc.
6. Savanur ...	Anti-Rinderpest Serum ...	250
	Rinderpest Goat Virus ...	1,230 cc.
	Anti-Fowl Cholera Serum ...	50
	Fowl Cholera Vaccine ...	50
7. Jodhpur ...	Anti-Rinderpest Serum ...	1,000
8. Sangli ...	Anti-Hæmorrhagic Septicæmia Serum ...	500
	Anti-Blackquarter Serum ...	200
	Rinderpest Goat Virus ...	945 cc.
9. Belgaum ...	Anti-Hæmorrhagic Septicæmia Serum ...	100
	Anti-Blackquarter Serum ...	100
10. Pondicherry ...	Blackquarter Bacterin ...	200
11. Madras ...	Sheep-pox Vaccine ..	2 cc. for experiments
12. Kathiawar State	Sheep-pox Vaccine ...	11 cc.
	Rinderpest Goat Virus ...	210 cc. (Morvi)
13. (U. P.) Agra ...	Sheep-pox Vaccine ...	9 cc.
14. Palamacottah ...	Anti-Fowl Cholera Serum ...	50
	Fowl Cholera Vaccine ...	50
15. Allahabad ...	Anti-Fowl Cholera Serum ...	100
	Fowl Cholera Vaccine ...	100
16. Hyderabad ...	Blackquarter Bacterin ...	2,000
	Anti-Fowl Cholera Serum ...	200
	Fowl Cholera Vaccine ...	200
17. Colombo ...	Fowl Cholera Vaccine ...	100
18. Trivandrum ...	Anti-Hæmorrhagic Septicæmia Serum ...	300
	Anti-Anthrax Serum ...	100

APPENDIX XVI.

Table showing the results of smears examined during the year 1936-37.

Disease suspected	Number of smears examined			Total
	Positive	Doubtful	Negative	
Tetanus	3	1	2	6
Anthrax	12	1	6	19
Blackquarter	59	...	2	61
Hæmorrhagic Septicæmia	408	1	5	414
Pasteurella	273	3	6	282
Theilaria mutans	88	...	438	526
Rinderpest virus smears	..	...	517	517
Post mortem smears of Baci Nearogen group ...	121	2	171	294
Total ...	...	...	...	2,119

APPENDIX XVII.

Statement of Revenue and Expenditure of the Mysore Serum Institute for the year 1936-37.

Revenue					Expenditure							
Sale of done animals	Sale of manure, etc.	Sale of Sera and Vaccines to places		Total	Salaries	Establishment	Travelling allowance	Purchase of animals for Serum Virus production	Feeding charges	Apparatus, chemicals and glassware	Contingencies	Buildings and other charges	Total
		Within the State	Outside the State										
Rs. a. p.													
1,604 13	6 4 0	53,984 0	45,043 11 0	1,00,688 12 6	47,876 3 0	32,940 12 0	608 0 0	5,610 11 8	7,276 11 7	6,640 1 6	6,611 11 10	558 0 0	67,622 3 7

APPENDIX XVIII.

Price list of Biological products prepared in the Mysore Serum Institute, Hebbal, Bangalore.

	Name of product	*Total contents in a bottle*	*Unit dose for charging*	*Cost per unit dose*
				Rs. a. p.
1.	Anti-Rinderpest Serum	250 cc. or 50 doses	5 cc.	0 1 6
2.	Anti-Blackquarter Serum	300 cc. or 20 doses	15 cc.	0 4 0
3.	Anti-Hæmorrhagic Septicæmia Serum ...	do	15 cc.	0 4 0
4.	Anti-Anthrax Serum	do	15 cc.	0 4 0
5.	Hæmorrhagic Septicæmia vaccine ...	250 cc. or 50 doses	5 cc.	0 2 0
6.	Blackquarter Filtrate	do	do	0 3 6
7.	Blackquarter Bacterin	do	do	0 3 6
8.	Sheep-pox Vaccine (supplied in ampoules).	100 doses in 1 cc. ampoule	1 cc.	0 6 0 (per 100 doses of 1 cc.)
9.	Rinderpest Bovine Virus (supplied in 1 oz. and 2 oz. bottles).	25 cc. or 25 doses	1 cc.	0 1 0
10	Rinderpest Goat Virus (Supplied in 1 oz. bottle).	15 cc. in one oz. bottle	15 cc.	3 8 0 (per 15 cc.)
11.	Fowl Cholera Serum	50 cc. in two oz. bottles supplied free of charge at present		
12.	Fowl Cholera Vaccine			

The above products are supplied on indents received from qualified Veterinarians or from Government Officers.

The minimum quantity of each product that can be supplied at a time is one bottle as noted in column 2.

These rates are for free delivery at the Institute premises and are inclusive of the cost of packing, cases and bottles. Cart hire is charged at Rs. 1-8-0 per cart, per trip, when arranging for despatch of the consignments by railway parcel.

Credit is allowed to the customers for the empties returned at Re. 0-12-0 per undamaged standard big case and at one anna for each standard half pint bottle.

The Institute cannot be held responsible for any breakages or losses in transit.

Indents received from Veterinarians other than Government Officers are complied with by V. P. P.

S. D. ACHAR,
Superintendent,
Serum Institute.

WD 860—GPB—250—8-3-38